

# SYLVA,

Or a DISCOURSE of

## FOREST-TREES,

AND THE

## PROPAGATION of TIMBER

In His MAJESTIES Dominions.

As it was Deliver'd in the *ROYAL SOCIETY* the xv<sup>th</sup> of *October*,  
MDCLXII. upon occasion of certain *Queries* propounded to that *Illustri-*  
*ous Assembly*, by the *Honourable* the *Principal Officers*, and *Commissioners* of the *Navy*.

## TERRA,

A

*Philosophical Essay* of *EARTH*, being a *Lecture* in *Course*.

To which is annexed

## POMONA:

OR, AN

*Appendix* concerning *Fruit-Trees* in relation to *CIDER*;  
The *Making*, and several ways of *Ordering* it.

Published by exprefs *Order* of the *ROYAL SOCIETY*.

ALSO

## KALENDARIVM HORTENSE;

OR, THE

## GARD'NERS ALMANAC;

Directing what he is to do *Monthly* throughout the *Year*.

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All which several *Treatises* are in this *THIRD EDITION* much *Intarged*, and *Improved*.

BY

*JOHN EVELYN* Esq; Fellow of the *ROYAL SOCIETY*.

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—*Tibis antiquæ laudis & artis*  
*Ingredior, tantos anſus recludere fontes.* Virg.

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LONDON,

Printed for *John Martyn*, Printer to the *Royal Society*, and are to be ſold at  
the *Bell* in *St Paul's Church-Yard*. MDCLXXIX.



STYLISH

TO THE

PROFAGATION

As it is well known that the Royal Society of Medicine upon occasion of certain cases of disease

THE

POMONA

OF THE

ALSO

KALENDRIUM

GARDENERS

JOHN EVERTON

LONDON  
Printed by John Minton, Printer to the Royal Society, in Pall Mall.

# TO THE KING.

**F**OR to whom, Sir, with so just and equal right should I present the Fruits of my Labours, as to the Patron of that SOCIETY, under whose Influence, as it was produced; so to whose Auspices alone, it owes the favourable Acceptance, which it has receiv'd in the World? To You then (Royal Sir) does this Third Edition continue its humble Addresses, tanquam NEMORUM VINDICI, as of old, they paid their devotions HERCULI & SYLVANO; since You are our Θεὸς ὕληος Nemorensis Rex; as having once your Temple, and Court too, under that Sacred Oak, which You Consecrated with Your Presence, and we Celebrate, with just acknowledgment to God for Your Preservation.

Cato de R. R.  
cap. 73.  
Aurel. Vict.  
Clas. Phil. apud  
Tranquill.  
And so Nemo-  
stius, Deus  
Nemorum,  
Arnob. l. 4.

I need not Acquaint Your Majesty how many Millions of Timber-Trees (beside infinite others) have been Propagated, and Planted throughout Your vast Dominions, at the Instigation, and by the sole Direction of this Work; because Your Gracious Majesty, has been pleas'd to own it Publickly, for my Encouragement, who, in all that I here pretend to say, deliver only those Precepts which Your Majesty has put into practice; as having (like another Cyrus) by Your own Royal example, exceeded all Your Predecessors in the Plantations You have made, beyond (I dare assert it) all the Monarchs of this Nation, since the Conquest of it. And, indeed what more August, what more Worthy Your Majestie, or more becoming our Imitation? than whilst You are thus solicitous for the Publick good, we pursue Your Majesties great Example; and by Cultivating our decaying Woods, contribute to Your Power, as to our greatest Wealth and Safety; since whilst Your Majesty is furnish'd to send forth those Argo's, and Trojan Horses, about this happy Island, we are to fear nothing

Argon. lib. 1.  
That famous  
Ship built of  
the Dodonean  
Oak.

from

## The Epistle Dedicatory.

from without it; and whilst we remain Obedient to Your just Commands, nothing from within it.

'Tis now some Years past, that Your Majesty was pleas'd to declare Your favourable Acceptance of a Treatise of Architecture, which I then presented to You, with many Gracious Expressions, and that it was a most useful piece. Sir, that Encouragement (together with the Success both of the Book it self, and of the former Editions of this) has animat'd me, still to continue my Oblation to Your Majesty of these Improvements: Nor was it certainly, without some Provident Conduct, that we have been thus solicitous to begin, as it were, with Materials for Building, and Directions to Builders; if due Reflection be made on that deplorable Calamity, the Conflagration of Your Imperial City; which nevertheless, by the Blessing of God, and Your Majesties gracious Influence, we have seen Rise again, a New, and much more Glorious PHOENIX.

This TRIBUTE, I now once more lay at the Feet of our ROYAL FOUNDER.

May Your Majesty be pleas'd, to be Invok'd by that no Inglorious TITLE, in the profoundest Submissions of

Gracious Sir,

Your Majesties

ever Loyal, most Obedient and

Faithful Subject and Servant,

J. EVELYN.

Sayer-Court  
5. Dec. 1678.



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TO THE  
R E A D E R.

**A**fter what the *Frontispiece* and *Porch* of this *Wooden Edifice* presents you; I shall need no farther to repeat the *Occasion* of this following *Discourse*; I am only to acquaint you, That as it was delivered to the *Royal Society* by an unworthy *Member* thereof, in Obedience to their *Commands*; by the same it is now *Re-publish'd* without any farther Prospect: And the *Reader* is to know, That if these dry sticks afford him any *Sap*, it is one of the least and meanest of those *Pieces* which are every day produc'd by that *Illustrious Assembly*, and which enrich their *Collections*, as so many *Monuments* of their accurate *Experiments*, and Publick endeavours, in order to the production of real and useful *Theories*; the Propagation and Improvement of *Natural Science*, and the honour of their *Institution*. If to this there be any thing subjoyned here, which may a while bespeak the *Patience* of the *Reader*, it is only for the encouragement of an *Industry*, and worthy *Labour*, much in our dayes neglected, as haply reputed a *Consideration* of too sordid and vulgar a nature for *Noble Persons*, and *Gentlemen* to busie themselves withal, and who oftner find out occasions to *Fell-down*, and Destroy their *Woods* and *Plantations*, than either to repair or improve them.

But we are not without hopes of taking off these *Prejudices*, and of reconciling them to a *Subject* and an *Industry* which has been consecrated (as I may say) by as good, and as great *Persons*, as any the *World* has produced; and whose Names we find mingl'd amongst *Kings* and *Philosophers*, grave *Senators*, and *Patriots* of their *Country*: For such of old were *Solomon*, *Cyrus*, and *Numa*, *Licinius* surnamed *Stolo*, *Cato*, and *Cincinnatus*; the *Piso's*, *Fabii*, *Cicero*, the *Plinies*, and thousands more whom I might



*To the Reader.*

enumerate, that disdain'd not to cultivate these *Rusticities* even with their own hands, and to esteem it no small *Accession*, to dignifie their *Titles*, and adorn their *purple* with these *Rural Characters* of their affections to *Planting*, and love of this part of *Agriculture*, which has transmitted to us their venerable *Names* through so many *Ages* and *Vicissitudes* of the *World*.

That famous *Answer* alone which the *Persian Monarch* gave to *Lyfander*, will sufficiently justifie that which I have said; besides what we might add, out of the *Writings* and *Examples* of the rest: But since these may suffice after due reproofs of the late impolitique *Wast*, and universal sloth amongst us; we would now turn our *Indignation* into *Prayers*, and address our selves to our better natur'd *Countrymen*; that such *Woods* as do yet remain intire, might be carefully *Preserved*, and such as are *Destroy'd*, sedulously *repaired*: It is what all Persons who are *Owners* of *Land* may contribute to, and with infinite *delight*, as well as *profit*, who are touch'd with that laudable *Ambition* of imitating their *Illustrious Ancestors*, and of worthily serving their *Generation*. To these my earnest and humble *Advice* should be, That at their very first coming to their *Estates*, and as soon as they get *Children*, they would seriously think of this *Work of Propagation* also: For I observe there is no part of *Husbandry*, which men commonly more fail in, neglect, and have cause to repent of, than that they did not begin *Planting* betimes, without which, they can expect neither *Fruit*, *Ornament*, or *Delight* from their *Labours*: Men seldom Plant *Trees* till they begin to be *Wise*, that is, till they grow *Old*, and find by *Experience* the *Prudence* and *Necessity* of it.

My next *Advice* is, that they do not easily commit themselves to the *Dictates* of their ignorant *Hinds* and *Servants*, who are (generally speaking) more fit to *Learn* than to *Instruct*. *Male agitur cum Domino quem Villicus docet*, was an *Observation* of old *Cato's*; and 'twas *Ischomachus* who told *Socrates* (discourfing one day upon a like subject) That it was far easier to *Make* than to *Find* a good *Husband-man*: I have often prov'd it so in *Gardeners*; and I believe it will hold in most of our *Countrey Employments*:

See Petrarch  
de Remed. u-  
triusque fortu-  
næ L. 1. Dial.  
57.

vide & conti-  
num, l. 7. &c.

## To the Reader.

ments: We are to exact Labour, not Conduct and Reason, from the greatest part of them; and the business of Planting is an Art or Science (for so Varro has solemnly defined it;) and that exceedingly wide of Truth, which (it seems) many in his time accounted of it; *facillimam esse, nec ullius acuminis Rusticationem*, namely that it was an easie and insipid Study. It was the simple Culture only, with so much difficulty retrieved from the late confusion of an intestine and boody War, like that of Ours, and now put in Reputation again, which made the noble Poet write,

How hard it was  
Low Subjects with illustrious words to grace.

*Facile ex vincere magnum  
Quam sit, & angustis hunc addere rebus honorem.*

Georg. 3.

Seeing, as the Orator does himself express it, *Nihil est homine libero dignius*; there is nothing more becoming and worthy of a Gentleman. It was indeed a plain man (a Potter by Trade) but let no body despise him because a Potter (*Agathocles*, and a King was of that Craft) who in my Opinion has given us the true reason why Husbandry, and particularly Planting, is no more improved in this Age of ours: especially, where Persons are Lords and owners of much Land. The truth is, says he, when men have acquired any considerable Fortune by their good Husbandry, and experience (forgetting that the greatest Patriarchs, Princes, their Sons and Daughters, belonged to the Plough, and the Flock) they account it a shame to breed up their Children in the same Calling which they themselves were educated in, but presently design them Gentlemen: They must forsooth, have a Coat of Arms, and live upon their Estates; So as by the time his Sons Beard is grown, he begins to be ashamed of his Father, and would be ready to despise him, that should upon any occasion mind him of his honest Extraction: And if it chance that the good-man have other Children to provide for; This must be the Darling, be bred at School, and the University, whilst the rest must to Cart and Plow with the Father, &c. This is the Cause, says my Author, that our Lands are so ill Cultivated and neglected. Every body will subsist upon their own Revenue, and take their Pleasure, whilst they Resign their Estates to be manag'd by the

*In agris erant  
tunc Senatores.  
Cic. de Senect.*

*Paliſſy, le  
Moyen de de-  
venir Rich.*

## To the Reader.

the most *Ignorant*, which are the *Children* whom they leave at home, or the *Hinds* to whom they commit them.) When as in *truth*, and in *reason*, the more *Learning*, the better *Philosophers*, and the greater *Abilities* they possess, the more, and the better are they qualified, to *Cultivate*, and improve their *Estates* : Methinks this is well and rationally argued.

And now you have in part what I had to produce in extenuation of this *Adventure* ; that *Animated* with a *Command*, and *Assisted* by divers *Worthy Persons* (whose *Names* I am prone to *celebrate* with all just *Respects*) I have presumed to cast in my *Symbol* ; which, with the rest that are to follow, may (I hope) be in some degree serviceable to him (who ere the happy *Person* be) that shall oblige the *World* with that compleat *Systeme* of *Agriculture*, which as yet seems a *desiderate*, and wanting to its full perfection. It is (I assure you) what is one of the *Principal Designs* of the *ROYAL SOCIETY*, not in this *Particular* only, but through all the *Liberal* and more useful *Arts* ; and for which (in the estimation of all equal *Judges*) it will merit the greatest of *Encouragements* ; that so, at last, what the *Learned Columella* has wittily reproached, and complain- ed of, as a defect in that *Age* of his, concerning *Agriculture* in general, and is applicable *here*, may attain its desired *Remedy* and *Consummation* in *This* of *Ours*.

*Prefat. ad P.  
Sylvium ;  
which I ear-  
nestly recom-  
mend to the  
serious peru-  
sal of our  
Gentry. Et  
mihi ad sapien-  
tis vitam prox-  
imè videtur ac-  
cedere. Cic. de  
Senectute.*

*Sola enim Res Rustica, quæ sine dubitatione proxima, & quasi consanguinea Sapientiæ est, tam discentibus eget, quam magistris : Adhuc in Scholis Rhetorum, & Geometrarum, Musicorumque, vel quod magis mirandum est, contemptissimorum vitiorum officinas, gulosius condiendi cibos, & luxuriosius fercula struendi, capitumque & capillorum concinnatores, non solum esse audiavi, sed & ipse vidi ; Agricolationis neque Doctores qui se profiterentur, neque Discipulos cognovi.* But this I leave for our *Gallants* to *Interpret*, and should now apply my self to the *Directive Part*, which I am all this while bespeak- ing, if after what I have said in the several *Paragraphs* of the ensuing *Discourse* upon the *Argument* of *Wood*, (and which in this *Third Edition* coming *Abroad* with innume- rable *Improvements*, and *Advantages* (so furnished, as I hope shall neither reproach the *Author*, or repent the *Reader*)

it



## To the Reader

it might not seem superfluous to have premised any thing here for the Encouragement of so becoming an Industry. There are divers Learned, and judicious Men who have preceded Me in this Argument; as many, at least, as have undertaken to Write and Compile vast *Herbals*, and *Theaters of Plants*; of which we have some of our own Country-men, who have (boldly I dare affirm it) surpass'd any, if not all the *Foreigners* that are extant: In Those it is you meet with the Description of the several *Plants*, by *Discourses*, *Figures*, *Names*, *Places of Growth*, time of *Flourishing*, and their *Medicinal Virtues*; which may supply any deficiency of mine as to those Particulars; if forbearing the Repetition, it should by any be imputed for a defect, though it were indeed none of my design: I say, these things are long since performed to our hands: But there is none of these (that I at least know of, and are come to my perusal) who have taken any considerable pains how to Direct, and Encourage us in the Culture of *Forest-Trees* (the grand defect of this Nation) besides some small sprinklings to be met withal in *Cervus Martianus*, *Old Tusser*, and of *Foreigners*, the *Country-Farm* long since Translated out of *French*, and by no means suitable to our climate and Country: Neither have any of these proceeded after my Method, and so particularly, in *Raising*, *Planting*, *Dressing* and *Governing*, &c. or so sedulously made it their business, to specify the *Mechanical Uses* of the several kinds, as I have done, which was hitherto a great desiderate, and in which the Reader will likewise find some things altogether New and Instructive; and both *Directions* and *Encouragements* for the Propagation of some *Foreign Curiosities* of Ornament and Use, which were hitherto neglected. If I have upon occasion presumed to say any thing concerning their *Medicinal properties*, it has been Modestly and Frugally, and with chief, if not only respect to the poor *Wood-man*, whom none I presume will envy, that living far from the *Physician*, he should in case of Necessity, consult the reverend *Druid*, his \* *Oak*,

twie facies Medicinis carent, Sacra illa parente rerum omnium, nusquam non remedia disponente homini, ut Medicinis, ferre etiam solitudo ipsa, &c. Hinc nata medicina, &c. Nec sola agitur placiditas esse remedia parata vulgo, inventu facilis, ac sine impendio, ex quibus vivimus, &c. Plin. l. 24. c. 2.

\* Nè Sylva quidem, horridiorque na-

and



## To the Reader.

and his Elm, Birch or Elder, for a short Breath, a Green Wound, or a sore Leg; Casualties incident to this hard Labour. These are the chief Particulars of this ensuing Work, and what it pretends hitherto of Singular, in which let me be permitted to say, There is sufficient for Instruction, and more than is extant in any Collection whatsoever (*absit verbo invidia*) in this way and upon this Subject; abstracting things Practicable, of solid use, and material, from the Ostentation and impertinences of divers Writers; who receiving all that came to hand on trust, to swell their monstrous Volumes, have hitherto impos'd upon the credulous World, without conscience or honesty. I will not exasperate the Adorers of our ancient and late Naturalists, by repeating of what our *Verulam* has justly pronounced concerning their *Rhapsodies* (because I likewise honour their painful Endeavours, and am obliged to them for much of that I know,) nor will I (with some) reproach *Pliny*, *Porta*, *Cardan*, *Mizaldus*, *Cursius*, and many others of great Names (whose *Writings* I have diligently consulted) for the Knowledge they have imparted to me on this Occasion; but I must deplore the time which is (for the most part) so miserably lost in pursuit of their Speculations, where they treat upon this Argument: But the World is now advis'd, and (blessed be God) infinitely redeem'd from that base and servile submission of our noblest Faculties to their blind Traditions. This, you will be apt to say, is a haughty Period; but whiles I affirm it of the Past, it justifies, and does honour to the Present Industry of our Age, and of which there cannot be a greater and more emulous Instance, than the Passion of His Majesty to encourage His Subjects, and of the Royal Society, (His Majesties Foundation) who receive and promote His *Decretes*, in all that is laudable and truly emolumental of this Nature.

It is not therefore that I here presume to instruct Him in the management of that great and august Enterprize of resolving to Plant and repair His ample Forests, and other Magazines of Timber, for the benefit of His Royal Navy, and the glory of His Kingdoms; but to present to His Sacred Person, and to the World, what Advices I have received

## To the Reader.

ceived from *others*, observed my *self*, and most Industriouslly Collected from a studious propensity to serve as one of the least *Intelligences* in the ampler *Orb* of our *Illustrious Society*, and in a *Work* so Necessary and Important.

And now since I mention'd the *Society*, give me leave (worthy Reader) as a *Member* of that *Body*, which has been the chief *Promoter* of this ensuing *Work*, (and, as I stand oblig'd) to vindicate that *Assembly*, and consequently, the *Honour* of His *Majesty* and the *Nation*, in a *Particular* which concerns it, though (in appearance) a little forreign to the present *Subject*.

I will not say that all which I have written in the several *Paragraphs* of this *Treatise*, is *New*; but that there are very many *New*, and *useful* things, and *Observations* (without insisting on the *Method* only) not hitherto deliver'd by any *Author*, and so freely communicated, I hope will sufficiently appear: It is not therefore in behalf of any *Particular* which concerns *my self*, that I have been induced to enlarge this *Preface*; but, by taking this *Occasion*, to encounter the un-sufferable *Boldness*, or *Ambition* of some *Persons* (as well *Strangers*, as *others*) arrogating to themselves the being *Inventors* of divers *New*, and usefull *Experiments*, justly Attributable to several *Members* of the *Royal Society* \*.

So far has that *Assembly* been from affecting *Glory*, that they seem rather to have declin'd their due; not as ashamed of so numerous, and fair an *Off-spring*; but as abundantly satisfied that after all the hard measure, and virulent *Reproaches* they had sustained, for endeavouring by united *Attempts*, and at their own *Charges*, to improve *Real Philosophy*; they had from time to time, cultivated that *Province* in so many *useful* and profitable *Instances*, as are already *Published* to the *World*, and will be easily *Asserted* to their *Authors* before all *Equitable Judges*.

This being the sole inducement of Publishing this *Apology*; it may not perhaps seem unseasonable to *Disabuse* some (otherwise) well-meaning *People*, who led-away and perverted by the noise of a few *Ignorant*, and *Comical Bouffoons*, (whose *Malevolence*, or *Impertinences* intitle them to nothing that is truly *Great* and *Venerable*) are with an

this *Society*, but 'tis not the business of this *preface* to enumerate all, though 'twas necessary to touch on some instances.

Consult Hist.  
Roy. Soc. and  
their Registers.

\* The Laws of motion,  
and the Geometrical  
streightning of curve  
lines were first found out  
by Sir Christopher Wren and  
Mr. Thomas Neile.

The equated isocrone  
motion of the weight of  
a circular pendulum in a  
paraboloïd, for the reg-  
ulating of Clocks. And  
the improving pocket  
watches by springs ap-  
plied to the ballance, were  
first invented and dem-  
onstrated to this Soci-  
ety by Mr. Hook.

I could mention the  
Barometer and several o-  
ther useful inventions  
which as well as these  
have been injuriously ar-  
rogated by strangers  
though invented by Eng-  
lish men and members of

### *To the Reader.*

*Insolence* suitable to their *Understanding*, still crying out, and asking, *What have the Society done?*

Now, as nothing less than *Miracles* (and unless *God* should every day repeat them at the call of these *Extravagants*) will convince some Persons, of the most *Rational* and *Divine Truths*, (already so often and extraordinarily established;) so, nor will any thing satisfy these *unreasonable Men*, but the production of the *Philosophers-stone*, and great *Elixir*; which yet were they *Possessors* of, they would consume upon their *Lux* and *Vanity*.

It is not therefore to gratify these magnificent *Fops*, whose *Talents* reach but to the adjusting of their *Peruques*, courting a *Miss*, or at the farthest writing a smutty, or scurrilous *Libel* (which they would have to pass for genuine *Wit*) that I concern my self in these *Papers*; but, as well in *Honour* of our *Royal Founder*, as the *Nation*, to assert what of other *Countries* has been surreptitiously *Arrogated*, and by which, they not only value themselves abroad; but (prevailing on the modesty of that *Industrious Assembly*) seek the deference of those, who whilst it remains still silent, do not so clearly discern this glorious *Plumage* to be purely *Ascititious*, and not a *Feather* of their own. —But still, *What have they done?*

Those who perfectly comprehend the *Scope*, and *End* of that noble *Institution*; which is to *Improve Natural Knowledge*, and enlarge the *Empire* of *Operative Philosophy*; not by an *Abolition* of the *Old*, but by the *Real Effects* of the *Experimental*; *Collecting*, *Examining*, and *Improving* their scatter'd *Phænomena's*, to establish even the *Received Methods* and *Principles* of the *Schools* (as far as were consistent with *Truth*, and matter of *Fact*) thought it long enough, that the *World* had been impos'd upon by that *Notional*, and *Formal* way of delivering divers *Systemes* and *Bodies* of *Philosophy* (falsely so call'd) beyond which there was no more *Country* to discover; which being brought to the *Test* and *Trial*, vapours all away in *Fume*, and empty *Sound*.

This *Structure* then being thus *Ruinous* and *Crazy*; 'tis obvious what they were to do; even the same which skilful *Architects* do every day before us; by pulling down the  
the



## *To the Reader.*

the decay'd, and sinking wall to erect a *better*, and more *substantial* in its place : They not only take down the *old*, reject the useleſs and decay'd ; but ſever ſuch *Materials* as are ſolid, and will ſerve again ; bring *new-ones* in, prepare and frame a *Model* ſuitable to ſo *magnificent* a *deſign* : This *Solomon* did in order to the *Building* of the *Material Temple* ; and *this* is here to be purſued in the *Intellectual* : Nay here was abundance of *Rubbish* to be clear'd, that the *Area* might be free ; and then was the *Foundation* to be deeply ſearched, the *Materials* accurately *Examined*, *Squared*, and *Adjusted* before it could be laid : Nor was this the labour of a *Few* ; leſs than a much longer time, more coſt, and encouragement than any which the *Society* has yet met withal, could in reaſon be ſufficient effectually to go through ſo chargeable a *Work*, and highly neceſſary.

A long time it was they had been ſurveying the *Decays*, of what was ready now to drop in pieces, whatever ſhew the outſide made with a noiſe of *Elements*, and *Qualities*, *Occult* and *Evident* ; abhorrence of *Vacuum*, *Sympathies*, *Antipathies* ; *Subſtantial forms*, and *Prime-matter* courting *Form* ; *Epicycles*, *Ptolomean Hypotheſes*, *magiſterial Definitions*, *peremptory Maximes*, *Speculative*, and *Positive* doctrines and *altiſonant Phraſes*, with a thouſand other *Precarious* and unintelligible *Notions*, &c. all which they have been turning over, to ſee if they could find any thing of *ſincere* and *uſeful* among this *Pedantick Rubbiſh*, but all in vain ; here was nothing *material*, nothing of moment *Mathematical*, or *Mechanical*, and which had not been miſerably *Sophiſticated*, on which to lay the ſtreſs ; nothing in a manner whereby any farther *Progreſs* could be made, for the *raiſing* and *Ennobling* the *Dignity* of *Mankind* in the *Sublimeſt* operations of the *Rational Faculty*, by clearing the *Obscurities*, and healing the *Deſects* of moſt of the *Physiological Hypotheſes*, repugnant, as they hitherto ſeemed to be, to the *Principles* of real *Knowledge* and *Experience*.

Now although it neither were their *Hopes*, or in their proſpect to *Conſummate* a *deſign* requiring ſo mighty aids (in-virion'd as they have been with theſe prejudices) yet have they not at all *deſiſted* from the *enterpriſe* ; but rather than ſo Noble and Illuſtrious an *undertaking* ſhould not proceed



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ceed for want of some generous and industrious Spirits to promote the *Work*; they have *themselves* submitted to those mean *employments*, of digging in the very *Quarry*; yea even and of making *Brick* where there was no *Straw*, but what they gleaned, and lay dispersed up and down: Nor did they think their pains yet *ill-bestow'd*; if through the assiduous *labour*, and a *train* of continual *Experiments*, they might at last furnish and leave solid, and uncorrupt materials to a *succeeding*, and more grateful *Age*, for the building up a *Body* of real, and substantial *Philosophy*, which should never succumb to time, but with the ruins of *Nature* and the *World* it self.

In order to this, how many, and almost innumerable have been their *Tryals*, and *Experiments* through the large, and ample field both of *Art* and *Nature*? We call our *Journals*, *Registers*, *Correspondence*, and *Transactions* to witness; and may with modesty provoke all our *Systematical Methodists*, *Natural Histories* and *Pretenders* hitherto extant from the *beginning* of letters, to this period; to shew us so ample, so worthy and so useful a *Collection*. 'Tis a *Fatality* and an *injury* to be deplored, that those who give us *hard-words*, will not first vouchsafe impartially to examine these particulars; since all *Ingenuous Spirits* could not but be abundantly satisfied, that this *Illustrious Assembly* has not met so many *Years* purely for *Speculation* only; though I take even that to be no ignoble *Culture* of the *Mind*, or time mispent for *Persons* who have so few *Friends*, and slender obligations, to those who should *Patronize* and *Encourage* them: But they have aimed at greater things, and greater things produc'd: namely, by *Emancipating*, and freeing themselves from the *Tyranny* of *Opinion*, delusory and fallacious shews, to receive nothing upon *Trust*, but bring it to the *Lydian touch*, make it pass the *Fire*, the *Anvil* and the *File*, till it come forth perfectly repurged, and of consistence. They are not hasty in concluding from a single, or incompetent number of *Experiments*, to pronounce the *Ecstatic Hecurica*, and offer *Hecatombs*; But, after the most diligent *Scrutiny*, and by degrees, and wary *Inductions* honestly and faithfully made; to *Record* the *Truth*, and event of *Tryals*, and transmit them to *Posterity*. They resort

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resort not immediately to general Propositions, upon every specious appearance ; but stay for light, and Information from Particulars, and make Report de Faëto, and as sense informs them. They reject no Sect of Philosophers, no Mechanic helps, except no Persons of Men ; but cherefully embracing all, cull out of all, and alone retain what abides the Test ; that from a plentiful, and well-furnish'd Magazine of true Experiments, they may in time, advance to solemn, and established Axiomes, General Rules and Maximes, and a Structure may indeed lift up its head, such as may stand the shock of Time, and render a solid accompt of the Phenomena, and Effects of Nature, the Aspectable Works of God, and their Combinations ; so as by Causes and Effects, certain and useful consequences may be deduced. Therefore they do not fill their Papers with Transcripts out of Rhapsodists, Mountebanks and Compilers of Receipts and Secrets to the loss of oyl and labour ; but as it were, eviscerating nature, disclosing the resorts, and springs of Motion have collected innumerable Experiments, Histories and Discourses ; and brought in Specimens for the Improvement of Astronomy, Geography, Navigation, Optics ; All the parts of Agriculture, the Garden and the Forest ; Anatomy of Plants, Mines and Ores ; Measures and Equations of Time by accurate Pendules, and other motions, Hydro-, and Hygrostatics, divers Engines, Powers and Automata, with innumerable more Luciferous particulars, subservient to humane life, of which the most obliging Dr. Glanvil has given an ample, and ingenious Accompt in his learned Essay.

This is (Reader) what they have done ; and they are but part of the Materials which the Society have hitherto amassed, and prepared for this great, and Illustrious Work ; not to pass-over an infinity of solitary, and loose Experiments, subsidiary to it, gathered at no small pains and cost : For so have they hitherto born the Burden and heat of the day alone ; Saping and Mining to lay the Foundation deep, and raise a superstructure to be one day perfected, by the joint endeavours of those who shall in a kinder Age, have little else to do, but the putting and cementing of the parts together, which to Collect and fit, have cost them so much solicitude and care. Solomon indeed built the glorious

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ous Temple; but 'twas David provided the Materials: Did Men in those days, insolently ask *What he had done*, in all the time of that tedious preparation? I beseech you what *Obligation* has the R. Society to render an *Account* of their proceedings to any who are not of the *Body*, and that carry on the *Work* at their own *expense* amidst so many contradictions? It is an *Evil Spirit*, and an *Evil Age*, which having sadly *debauch'd* the *minds* of Men; seeks with industry to blast and undermine all *attempts*, and endeavours that signify to the illustration of *Truth*, the discovery of *Impostors*, and shake their sandy foundations.

*Those who come* (says the noble *Verulam*) to enquire after knowledge, with a mind to scorn, shall be sure to find matter for their humor; but none for their Instruction: would Men bring light of Invention, and not fire-brands of Contradiction, knowledge would infinitely increase. But these are the *Sabbatists* and *Hornites* who disturb our Men upon the wall: But, let us rise up and build, and be no more discourag'd. 'Tis impossible to conceive, how so honest, and worthy a design should have found so few *Promoters*, and cold a welcome in a Nation whose eyes are so wide open: We see how greedily the *French*, and other *Strangers* embrace and cultivate the design: what sumptuous *Buildings*, well furnish'd *Observatories*, ample *Appointments*, *Salaries*, and *Accommodations* they have erected to carry on the *Work*; whilst we live *Precariously*, and spin the *Web* out of our own *bowels*. Indeed we have had the honour to be the first who led the way, given the *Ferment*, which like a train has taken *Fire*, and warm'd the *Regions* all about us. *This Glory* doubtless, shall none take from us: But whilst they flourish so abroad, we want the *Spirit* should diffuse it here at home, and give progress to so hopeful a *beginning*: But as we said, the *Enemy* of *Mankind* has done us this despite; It is his interest to impeach (in any sort) what e're opposes his *Dominion*; which is to lead, and settle Men in *Errors* as well in *Arts*, and *Natural Knowledge*, as in *Religion*; and therefore would be glad, the *World* should still be groping after both. 'Tis he that sets the *Bouffoones*, and empty *Sycophants*, to turn all that's *Great* and *Virtuous* into *Raillery* and derision: 'Tis therefore to encounter these,



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these, that like those resolute *Builders* whilst we employ Neh. 4. 17. one hand in the work, we, with the other are oblig'd to hold our *Weapon*, 'till some bold, and *Gallant genius* deliver us, and raise the *Siege*. How gloriously would such a *Benefactor* shine! What a *Constellation* would he make! how great a *Name* establish! For mine own part (*Religiously* I profess it) were I not a *Person*, who (whilst I stood expecting when others more worthy, and able than my self, should have snatch'd the opportunity of signalizing a work worthy of *Immortality*) had long since given *Hostages* to *Fortune*, and so put my self out of capicity of shewing my *Affection* to a design so glorious; I would not only most cherefully have contributed towards the freeing it from the *straits* it so long has struggl'd under; but *Sacrific'd* all my *Secular Interests* in their service: But, as I said, this is reserv'd for that *Gallant Hero* (who e're he be) that truly weighing the noble and universal *Consequence* of so high an *Enterprize*; shall at last free it of these *reproaches*; and either set it above the reach of *Envy*, or convert it to *Emulation*. This were indeed to consult an honest *Fame*, and to *Embalme* the *Memory* of a *Greater Name* than any has yet appear'd amongst all the *Benefactors* of the *Disputing Sects*: Let it suffice to affirm, that next the *Propagation* of our most *Holy Faith*, and its *Appendants*, nor can His *Majesty* or the *Nation* build their *Fame* on a more lasting, a more *Glorious Monument*; The propagation of *Learning*, and *useful Arts*, having always surviv'd the *Triumphs* of the proudest *Conquerors*, and *spillers* of humane blood; *Princes* have been more *Renown'd* for their *Civility* to *Arts* and *Letters*, than to all their *Sanguine Victories*, subduing *Provinces*, and making those brutish desolations in the *World*, to feed a salvage, and vile *Ambition*. Witness you *Great Alexander*, and you the *Ptolomies*, *Cæsars*, *Charlemain*, *Francis the First*; the *Cosmas*, *Fredrics*, *Alphonfus's*, and the rest of *Learned Princes*, since when all the *Pomp* and noise is ended; They are those little things in black, (whom now in scorn they term *Philosophers*, and *Fopps*) to whom they must be oblig'd, for making their *Names* out-last the *Pyramids* whose *Founders* are as unknown, as the heads of *Nile*; because they



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they either deserv'd no *Memory* for their *Vertues*; or had none to transmit them, or their *Actions* to *Posterity*.

Is not our *R. Founder* already *Panegyriſ'd* by all the *Universities*, *Academists*, *Learned Persons*, divers *Princes Ambassadors* and *Illustrious Men* from abroad? Witness besides, the many accurate *Treatises* and *Volumes* of the most curious, and useful Subjects, *Medicinal*, *Mathematical*, and *Mechanical* dedicated to His Majesty as *Founder*; to its *President*, and to the *Society* by the greatest *Wits*, and most profoundly knowing of the *European World*, celebrating their *Institution* and *Proceedings*: Witness, the daily submissions and solemn *Appeals* of the most learned *Strangers* to its *suffrages*, as to the most able, candid and impartial *Judges*: Witness, the *Letters*, and *Correspondencies* from most parts of the *habitable Earth*, *East*, and *West-Indies*, and almost from *Pole to Pole*; besides what they have receiv'd from the very Mouthes of divers *Professors*, *Publicque Ministers*, great *Travellers*, *Noblemen*, and *Persons* of highest quality; who have not only frequented the *Assembly*, but desir'd to be *Incorporated* and *Ascrib'd* into their *Number*; so little has His Majesty, or the *Kingdom* been diminish'd in their reputation, by the *Royal Society*, to the reproach of our sordid *Adversaries*: Never had the *Republicque* of *Letters* so learned and universal a *Correspondence* as has been procur'd and promoted by this *Society* alone; as not only the casual *Transactions* of several years (filled with *Instances* of the most curious, and useful *Observations*) make appear; but (as I said) the many *Nuncupatory Epistles* to be seen in the fronts of so many learned *Volumes*: There it is you will find *CHARLES* the II. plac'd among the *Heroes* and *Demi-Gods*, for his *Patrociny* and *Protection*; There you will see the numerous *Congratulations* of the most learned *Foreigners*, celebrating the happiness of their *Institution*; and that whilst other *Nations* are still benighted under the dusky *Cloud*, such a refulgent beam should give day to this blessed *Isle*; And certainly, it is not to be supposed that all these *Learned Persons*, of so many, and divers *Interests*, as well as *Countries*, should speak, and write thus out of *Flattery*, much less of *Ignorance*; being Men the most refin'd, of *Universal Knowledge*,

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ledge, as well as *Ingenuity*: But I should never end, were I to pursue this fruitful *Topic*. I have but one word more to add, to conciliate the *Favour*, and esteem of our own *Universities*, to an *Assembly* of *Gentlemen*, who from them acknowledge to have deriv'd all their *Abilities* for these laudable undertakings; and what above all, is most *shining* in them of most *Christian*, *Moral* and otherwise conspicuous, as from the *Source* and *Fountain* to which on all occasions, they are not only ready to pay the *Tribute* and *Obsequiousness* of humble *Servants*, but of *Sons*, and dutiful *Alumni*. There is nothing verily which they more desire, than a fair and mutual *Correspondence* between so near *Relations*, and that they may perpetually be *Flourishing* and *Fruitful* in bringing forth (as still they do) supplies to *Church* and *State* in all its great capacities: Finally, that they would regard the *Royal Society* as a *Colony* of their own *Planting*, and *Augure* it *success*. And if in these *Labours*, and arduous *attempts*, several *Inventions* of present use and service to *Mankind* (either detecting *Errors*, illustrating, and asserting *Truths*, or propagating knowledge in *Natural-things*, and the visible *works* of *God*) have been discover'd; as they *envy* not the *Communicating* them to the *World*; so should they be *wanting* to the *Society*, and to the *Honour* of divers *Learned*, and *Ingenious Persons* (who are the *Soul* and *Body* of it) not to *vindicate* them from the ambitious *Plagiary*, the insults of *Scoffers* and injurious men: Certainly persons of right *Noble* and subact'd *Principles*, that were *Lovers* of their *Countrey*, should be otherwise affected; and rather strive to encourage, and promote endeavours tending to so generous a *design*, than decry it; especially, when it costs them nothing but their *Civility* to so many obliging persons, though they should hitherto have entertain'd them but with some innocent *Diversions*. To conclude, we *envy* none their *dues*; nay we gratefully acknowledge any light which we receive either from *Home* or from *Abroad*: We *Celebrate*, and *Record* their *Names* amongst our *Benefactors*; recommend them to the *publique*, and what we thus freely give, we hope as freely to receive.

Thus have I endeavour'd to vindicate the *Royal Society*  
a from

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from some *Aspersions* and *Incrumements* it hitherto has suffer'd; and shew'd under what *weights* and *pressure* this *Palme* does still emerge; And if for all this I fall *short* of my *attempt*; I shall yet have this *satisfaction*; That though I derive no *Glory* from my own *Abilities* (sensible of my great *Defects*) I shall yet *deserve* their *pardon* for my *zeal* to its *Prosperity*.

*Epicetetus, &c.*

Φιλοσοφίας επιθυμείς; παρασκευάζετε αὐτοὺς &c.

Desirest thou to be a *Philosopher*? Prepare thy self for *Scuffs*: What, you are setting up for a *Virtuoso* now? Why so proud I pray? Well, be not thou proud for all this; But so keep thee to what shall seem *best* and *laudable*, as if *God* himself had plac'd thee there; and remember, that so long as thou shalt remain in that *State*, and *resolution*, thy *Reproachers* will in time, *admire* thee; But, if once through *Inconstancy* thou *give-out* and *flinch*, δὲλας παραδείξῃς καὶ τὴν γέλοιον, Thou *deservest* to be doubly *laught at*.

*Lord Verulam, Instaur-Scient.*

Some Men (like *Lucian* in *Religion*) seek by their *Wit*, to *Traduce*, and *Expose* useful things; because to arrive at them, they converse with *mean Experiments*: But those who *despise* to be employ'd in *ordinary* and *common* matters, never arrive to *solid perfection* in *Experimental Knowledge*.

*J. Evelyn.*

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**ADVER.**



## ADVERTISEMENT.

As I did not altogether compile this *Work* for the sake of our Ordinary *Rustics*, but for the more *Ingenious*; the benefit and diversion of *Gentlemen*, and Persons of *Quality*, who often refresh themselves in these agreeable *Toiles* of *Planting*, and the *Gardens*: I may perhaps in some places, have made use of (here and there) a *Word* not as yet so familiar to every *Reader*; but none that I know of, which are not sufficiently explained by the *Context* and *Discourse*. That this may yet be no *prejudice* to the *meaner capacities* let them *Read* for

*Ablaqueation*, laying bare the *Roots*.

*Amputation*, cutting quite off.

*Arbutor*, *Pruner*, or one that has care of the *Trees*.

*Avenue*, the principal *Walk* to the *Front* of the *House* or *Seat*.

*Bulbs*, round or *Onion-shap'd* roots.

*Calcine*, burn to ashes.

*Compost*, *Dung*.

*Conservatory*, green-house to keep choice *Plants*, &c. in.

*Contr'espaliere*, a *Palisade* or *Pole-bedge*.

*Coronary Garden*, *Flower-Garden*.

*Culinarie*, belonging to the *Kitchen*, *Roots*, *Salading*, &c.

*Culture*, dressing.

*Decorticate*, to strip off the *Bark*.

*Emascation*, cleansing it of the *Moss*.

*Esculent*, *Roots*, *Salads*, &c. fit to eat.

*Espalieres*, *Wall-fruit-trees*.

*Exotics*, ourlandish, rare and choice.

*Fermentation*, *Working*.

*Fibrous*, stringy.

*Fronation*, stripping off *Leaves*, and *Boughs*.

*Heterogeneous*, repugnant.

*Homogeneous*, agreeable.

*Hyemation*, protection in *Winter*.

*Ichnographie*, *Ground-plot*.

*Inoculation*, budding.

*Insition*,

*Infition*, Graffing.  
*Insolation*, exposing to the Sun.  
*Interlucation*, thinning and disbranching of a Wood.  
*Irrigation*, Watering.  
*Laboratorie*, Still-house.  
*Letation*, Dung.  
*Lixivium*, Lee.  
*Mural*, belonging to the wall.  
*Olitorie*, Salads, &c. belonging to the *Kitchen-Garden*.  
*Palisade*, Pole-hedge.  
*Parterre*, Flower-Garden, or *Knots*.  
*Perennial*, continuing all the year.  
*Quincunx*, Trees set like the *Cinque-point* of a *Die*.  
*Rectifie*, re-distill.  
*Seminarie*, Nurserie.  
*Stercoration*, Dunging.  
*S. S. S. Stratum super Stratum*, one bed, or layer upon  
 another.  
*Tonfile*, that which may be shorn, or clip'd.  
*Topiarie*-works, the clipping, cutting and forming of hedges, &c.  
 into figures and works.  
*Vernal*, belonging to the Spring, &c. The rest are *Obvious*.

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*B O O K S* Publish'd by the *Author* of  
 this *Discourse*.

1. *The French Gard'ner*, III. Edition: *Twelves*, with Mr. *Rose's* Vineyard.
2. *Fumi-fugium*, or a *Prophetic Invektive* against the *Smoke* of *London*: *Quarto*.
3. *Sylva*, or a *Discourse* of *Forest-Trees*, &c. the III. Edition, very much *Improv'd*: *Fol*.
4. *Kalendarium Hortense*, both in *Folio* and *Octavo*, the V. Edition, much *Augmented*.
5. *Sculptura*, or the *History* of *Chalcography* and *Engraving* in *Copper*, the *Original* and *Progress* of that *Art*, &c. *Octavo*.
6. *The Parallel of Architecture*, being an *Account* of *Ten* famous *Architects*, with a *Discourse* of the *Terms*, and a *Treatise* of *Statues*: *Folio*.
7. *The Idea* of the *Perfection* of *Painting*: *Octavo*.
8. *Navigation*, and *Commerce*, their *Original*, and *Progress*: *Octavo*.
9. *Terra*, or a *Philosophical discourse* of *Earth*, II. Edition: *Folio* and *Octavo*.

*Amico*

Amico charissimo *Jobanni Evelyno Armigero,*  
è Societate Regali Londini. J. Beale, S. P. D.  
In Sylvam.

**F**are age quid causæ est quod tu Sylvestria pangis,  
Inter Sylvanos, capripedesque Deos?  
Inter Hamadryadas lætus, Dryadasque pudicas,  
Cum tua Cyrrhæis sit Chelys apta modis!  
Scilicet hoc cecinit numerosus Horatius olim,  
Scriptorum Sylvam quod Chorus Omnis amat.  
Est locus ille Sacer Musis, & Apolline dignus,  
Prima dedit Summo Templa Sacrandæ Jovi.  
Hinc quoque nunc Pontem Pontus non respuit ingens,  
Stringitur Oceanus, corripiturque Salum.  
Hinc novus Hesperiiis emerfit mundus in oris,  
Effuditque auri flumina larga probi.  
Hinc exundavit distento Copia cornu,  
Qualem & Amalthææ non habuere sinus.  
Sylva tibi curæ est, grata & Pomona refundit  
Auriferum, roseum, purpureumque nemus.  
Illa famemque sitimque abigens expirat odores,  
Quales nec Medus, nec tibi mittit Arabs.  
Ambrosiam præbent modo cocta Cydonia, Tantum  
Comprime, Nectareo poma liquore fluunt.  
Progredere, O Sæcli Cultor memorande futuri,  
Felix Horticolam sic imitere Deum.

Gen. I. 6. 2.



Nobilissimo Viro Johanni Evelyno Regalis  
Soc. Socio dignissimo.

**A**usus laudato qui quondam reddere versu,  
Æternum & tentare melos, conamine magno  
Lucreti nomenque suum donaverat ævo :  
Ille leves atomos audaci pangere musa  
Aggreditur, variis & semina cæca figuris,  
Naturæque vias : non quæ Schola garrula jactat,  
Non quæ rixanti fert barbara turba Lyceo :  
Ingentes animi sensus, & pondera rerum,  
Grandior expressit Genius, nec scripta minora  
Evlinum decuisse solent.

*Libro de coloribus.* Tuque per obscuros (victor Boylæ) recessus,  
Naturæ meditaris opus, qua luce colores  
Percipimus, quali magnus ferit organa motu  
Cartesius, quali volitant primordia plexu  
Ex atomis, Gassende, tuis ; simulachraque rerum  
Diffugiunt tacito vastum per inane meatu :  
Mutato varios mentitur lana colores  
Lumine ; dum tales ardens habet ipsa figuras  
Purpura, Sidonioque aliæ tinxere veneno :  
Materiam assiduo variatam, ut Protea, motu  
*De originis formæ.* Concipis, hinc formæ patuit nascentis origo,  
Hinc hominum species, & vasti machina cæli :  
Ipse creare Deus, solusque ostendere mundum  
Boylæus potuit, sed nunc favet æmula virtus,  
(Magne Eveline) tibi, & generosos excitat ignes :  
Perge Scipiadæ duo, qui vel mille Marones  
Obruitis, longo & meriti lassatis honore.

*De Wotton in agro Surrensi.* Tu vero dilecte nimis ! qui stemmate ab alto  
Patricos deducis avos, cerasque parentum  
Wottonicæ de stirpe domus ; virtutibus æquas  
Nunc generis monumenta tui, post tædia Ponti

Innumerasque errore vias, quid Sequana fallax,  
 Hostilis quæ Rhenus agit, quæ Tiberis, & Ister,  
 Nota tibi: triplici quid perfida Roma corona  
 Gessit, & Adriaca Venetus deliberat arce,  
 Qualiaque Odrysias vexârunt prælia lunas.  
 Hic qui naturæ interpres & sedulus artis  
 Cultor, qui mores hominum cognovit, & urbes:  
 Dum Plæbo comes ire parat, mentemque pacem  
 Vidit uterque polus, nec Grajum cana vetustas  
 Hunc latuit, veterum nunc prisca numismata regum  
 Eruit, & Latias per mystica templa ruinas:  
 Æstimat ille Forum, & vasti fundamina Circi,  
 Cunque ruinoso Capitolia prisca Theatro,  
 Et Dominos colles altæque palatia Romæ:  
 Regales notat inde domos, ut mole superba  
 Surgat apex, molles quæ tecta imitantur Ionas,  
 Qualia Romulea, Gothica quæ marmora dextra,  
 Quicquid Tuscus habet, mira panduntur ab arte.  
 O famæ patriæque sacer! vel diruta chartis  
 Vivet Roma tuis; te vindice, leta Corinthus  
 Stabit adhuc, magno nequicquam invisa Metello.

Nunc quoque Ruris opes dulcesque ante omnia curas  
 Pandis ovans, tristes maneat quæ cura Decembres,  
 Pleiades hæc Hyadesque jubent, hæc leta Bootes  
 Semina mandat humi, ardenti hæc Sirius agro,  
 Cæpit ut æstiva segetes torrere favilla,  
 Hoc Maij vernantis opus, dum florea ferta  
 Invitant Dominas ruris, dum vere repent  
 Ridet ager, renovatque suos Narcissus amores.

Haud aliter victrix divinam Æneida vates  
 Lufit opus, simul & gracili modulatus avena,  
 Fata decent majora tuos Eveline, triumphos,  
 Æternum renovatur honos, te nulla vetustas  
 Obruet, atque tua servanda volumina cedro  
 Durent, & meritam cingat tibi laurea frontem  
 Qui vitam Sylvis donasti & Floribus ævum.

Consulta librum  
 Autoris de Ar-  
 chitectura.

R. Bohun.

# ΕΙΣ ΤΗΝ ΤΟΥ ΠΑΤΡΟΣ ΔΕΝΔΡΟΛΟΓΙΑΝ.

**Υ** Μνήσω φρονίμιο παῖρς μελέεσιν ἐπαῖνος,  
 Ὑμνήσω ἐπέεσιν ἀρισεύοντα γλωσσῶν·  
 Οὐρανίην παναῆς ἀρετὴν δρυὸς αὐτὸς ἔγραψεν,  
 Καὶ ποταπῶν γενεὴν δένδρων καὶ δάσκιον ὕλην·  
 Ἀθανάτων κύνιδες ἔη νεφεληγερέτα Ζεὺς,  
 Ἐχεν δὲ δένδροιο φίλαις περσπιδέουσιν ἑλδαρ,  
 Φύλλοις τ' ἀμβροτοῖσι δαλερᾶς δρυὸς ἐσπεράνωτο·  
 Ἀγλίακῶν ὅς ἄρ' ἔη θεοείκελ' ἀνὴρ,  
 Ἰσορίην δένδρων τέλεσεν φρέσι κυδαλίμοισι,  
 Ὑλογενὴς, κηπηρὸς, ὑπέρροχ', ὅς μὲν ὄνειαρ  
 Ἀνδράσιν εἰσομύχοις καὶ γάμῳ περλυβότειραν,  
 Νηυσὶ τε ποντοπύρροις βαρυγδᾶποιο δαλαάουης.

*Jo. Evelyn, Jun.*



# THE GARDEN.

To J. Evelyn Esquire.

I Never had any other desire so strong, and so like to Covetousness as that one which I have had always that I might be Master at last of a small house and large Garden, with very moderate conveniences joyned to them, and there dedicate the remainder of my life only to the culture of them, and study of Nature,

And there (with no design beyond my wall) whole and entire to lye,

In no unactive Ease, and no unglorious Poverty.

Or as *Virgil* has said, Shorter and Better for me, that I might there *Studiis florere ignobilis otii* (though I could wish that he had rather said, *Nobilis otii*, when he spoke of his own) but several accidents of my ill fortune have disappointed me hitherto, and do still of that felicity; for though I have made the first and hardest step to it, by abandoning all ambitions and hopes in this World, and by retiring from the noise of all business and almost company, yet I stick still in the Inn of a hired House and Garden, among Weeds and Rubbish; and without that pleasantest work of Humane Industry, the Improvement of something which we call (not very properly, but yet we call) our Own. I am gone out from *Sodom*, but I am not yet arrived at my little *Zoar*. *O let me escape thither, (is it not a little one?) and my Soul shall live.* I do not look back yet; but I have been forced to stop, and make too many halts. You may wonder, Sir, (for this seems a little too extravagant and Pindarical for *Prose*) what I mean by all this Preface; It is to let you know, That though I have mist, like a Chymist, my great End, yet I account my affections and endeavours well rewarded by something that I have met with by the By; which is, that they have procured to me some part in your kindness and esteem; and thereby the honour of having my Name so advantageously recommended to Posterity, by the *Epistle* you are pleased to prefix to the most useful Book that has been written in that kind, and which is to last as long as Months and Years.

Among many other *Arts* and *Excellencies* which you enjoy, I am glad to find this Favourite of mine the most predominant, That you choose this for your Wife, though you have hundreds of other Arts for your Concubines; though you know them, and  
c beget

beget Sons upon them all (to which you are rich enough to allow great Legacies) yet the issue of this seems to be designed by you to the main of the Estate; you have taken most pleasure in it, and bestow'd most charges upon its Education: and I doubt not to see that Book, which you are pleas'd to promise to the World, and of which you have given us a large earnest in your Calendar, as accomplisht, as any thing can be expected from an *Extraordinary Application*, and no ordinary Expences, and a long Experience. I know no body that possesses more private happiness than you do in your Garden; and yet no man who makes his happiness more publick, by a free communication of the Art and Knowledge of it to others. All that I my self am able yet to do, is only to recommend to Mankind the search of that Felicity, which you instruct them how to Find and to Enjoy.

I.

Happy art thou whom God does bless  
With the full choice of thine own Happiness;  
And happier yet, because thou'rt blest  
With prudence how to choose the best:  
In Books and Gardens thou hast plac'd aright  
(Things well which thou dost understand,  
And both dost make with thy laborious hand)  
Thy noble innocent delight:  
And in thy virtuous Wife, where thou again dost meet  
Both pleasures more refin'd and sweet:  
The fairest Garden in her Looks,  
And in her Mind the wisest Books.  
Oh, Who would change these soft, yet solid joys,  
For empty shows and senceless noise;  
And all which rank Ambition breeds,  
Which seem such beauteous Flowers, and are such poisonous Weeds?

2.

When God did Man to his own Likeness make,  
As much as Clay, though of the purest kind,  
By the great Potters art refin'd,  
Could the Divine Impression take:  
He thought it fit to place him, where  
A kind of Heav'n too did appear,  
As far as Earth could such a likeness bear:  
That man no happiness might want,  
Which Earth to her first Master could afford;  
He did a Garden for him plant  
By the quick hand of his Omnipotent Word.  
As the chief Help and Joy of Humane Life,  
He gave him the first Gift; first, ev'n before a Wife.

For

3.  
For God, the universal Architect,  
T had been as easie to erect  
A Louvre, or Escorial, or a Tower  
That might with Heav'n communication hold,  
As *Babel* vainly thought to do of old:  
He wanted not the skill or power,  
In the World's Fabrick those were shown,  
And the Materials were all his own.  
But well he knew what place would best agree  
With Innocence, and with Felicitie:  
And we else where still seek for them in vain,  
If any part of either yet remain;  
If any part of either we expect,  
This may our judgement in the search direct;  
God the first Garden made, and the first City, *Cain*.

4.  
O blessed shades! O gentle cool retreat  
From all th' immoderate Heat,  
In which the frantick World does burn and sweat!  
This does the Lion Star, Ambitions rage;  
This Avarice, the Dog-Stars Thirst assuage;  
Every where else their fatal power we see,  
They make and rule Mans wretched Destinie:  
They neither Set, nor disappear,  
But tyrannize o'r all the Year;  
Whil't we ne'r feel their Flame or Influence here.  
The Birds that dance from bough to bough,  
And sing above in every Tree,  
Are not from Fears and Cares more free,  
Than we who Lie, or Walk below,  
And should by right be Singers too.  
What Princes Quire of Musick can excell  
That which within this shade does dwell?  
To which we nothing Pay or Give,  
They like all other Poets live,  
Without reward, or thanks for their obliging pains;  
'Tis well if they become not Prey:  
The whistling winds add their less artful strains,  
And a grave Base the murmuring Fountains play;  
Nature does all this Harmony bestow,  
But to our Plants, Arts Musick too,  
The Pipe, Theorbo, and Guitar we owe;  
The Lute it self, which once was Green and Mute,  
When *Orpheus* struck th' inspired Lute,  
The Trees danc'd round, and understood  
By Sympathy the voice of wood.

These



5.

These are the Spells that to kind Sleep invite,  
 And nothing does within resistance make,  
 Which yet we moderately take;  
 Who would not choose to be awake,  
 While he's compass'd round with such delight,  
 To th' Ear, the Nose, the Touch, the Taste, and Sight?  
 When ~~Kenur~~ would her dear ~~Africanus~~ keep  
 A Prisoner in the Downy Bands of Sleep,  
 She Od'orous Herbs and Flowers beneath him spread  
 As the most soft and sweetest Bed;  
 Not her own Lap would more have charm'd his Head.  
 Who, that has Reason, and his Smell,  
 Would not among Roses and Jasmin dwell,  
 Rather than all his Spirits choak  
 With exhalations of Dirt and Smoak?  
 And all th' uncleanness which does drown  
 In pestilential Clouds a populous Town?  
 The Earth it self breaths better Perfumes here,  
 Than all the Female Men or Women there,  
 Not without cause about them bear.

6.

When *Epicurus* to the World had taught,  
 That pleasure was the chiefest good,  
 (And was perhaps i'th right, if rightly understood)  
 His life he to his Doctrine brought,  
 And in a Gardenshade that Sovereign Pleasure sought.  
 Whoever a true Epicure would be,  
 May there find cheap and virtuous Luxurie.  
*Vitellius* his Table, which did hold  
 As many Creatures as the Ark of old:  
 That Fiscal Table, to which every day  
 All Countreys did a constant Tribute pay,  
 Could nothing more delicious afford,  
 Than Natures Liberality,  
 Helpt with a little Art and Industry,  
 Allows the meanest Gard'eners board.  
 The wanton Taft no Fish or Fowl can choose,  
 For which the Grape or Melon she would loose,  
 Though all th' Inhabitants of Sea and air  
 Be list'd in the Gluttons Bill of Fare;  
 Yet still the Fruits of Earth we see  
 Plac'd the third Story high in all her Luxurie.

7.

But with no Sense the Garden does comply;  
 None courts or flatters, as it does the Eye:

When

When the great *Hebrew* King did almost strain  
The wond'rous Treasures of his Wealth and Brain;  
His Royal Southern Guest to entertain;

Though she on Silver Floors did tread,  
With bright *Affrian* Carpets on them spread,  
To hide the Metals Poverty;  
Though she look'd up to Roofs of Gold,  
And nought around her could behold  
But Silk and rich Embroidery,  
And *Babylonian* Tapestry,  
And wealthy *Hirani* Princely Dye;

Though *Ophirs* Starry Stones met everywhere her Eye;  
Though she her self, and her gay Host were drest  
With all the shining glories of the East;  
When lavish Art her costly work had done,  
The honour and the prize of Bravery  
Was by the Garden from the Palace won;  
And every Rose and Lilly there did stand  
Better attir'd by Natures hand:  
The case thus judg'd against the King we see,  
By one that would not be so Rich, though wiser far than he.

8.  
Nor does this happy place only dispense  
Such various pleasures to the Sense,  
Here Health it self does live;  
That Salt of Life which does to all a relish give,  
Its standing Pleasure, and Intrinsick Wealth,  
The Bodies Virtue, and the Souls good Fortune, Health.  
The Tree of Life when it in *Eden* stood,  
Did its immortal head to Heaven rear;  
It lasted a tall Cedar till the Flood;  
Now a small thorny shrub it does appear;  
Nor will it thrive too every where:  
It always here is freshest seen;  
'Tis only here an Ever-green.  
If through the strong and beauteous Fence  
Of Temperance and Innocence,  
And wholesome Labours and a quiet Mind,  
And Diseases passage find,  
They must not think here to assail  
A Land unarmed, or without a Guard;  
They must fight for it, and dispute it hard,  
Before they can prevail:  
Scarce any Plant is growing here  
Which against Death some Weapon does not bear.  
Let Cities boast, that they provide  
For Life the Ornaments of Pride;  
But 'tis the Countrey and the Field,  
That furnish it with Staff and Shield.

Where does the Wisdom and the Power Divine  
In a more bright and sweet Reflection shine?  
Where do we finer strokes and colours see  
Of the Creator's real Poetrie;

Than when we with attention look  
Upon the third days Volume of the Book?  
If we could open and intend our Eye,

We all like *Moses* should espy  
Ev'n in a Bush the radiant Deity:

But we despise these his Inferior ways,  
(Though no less full of Miracle and Praise)

Upon the Flowers of Heaven we gaze;  
The Stars of Earth no wonder in us raise,

Though these perhaps do more than they,  
The life of Mankind sway.

Although no part of mighty Nature be  
More stor'd with Beauty, Power, and Myserie;  
Yet to encourage humane Industrie,  
God has so ordered, that no other part  
Such Space, and such Dominion leaves for Art.

10.

We no where Art do so triumphant see,  
As when it Grafts or Buds the Tree;  
In other things we count it to excell,  
If it a Docile Scholar can appear  
To Nature, and but imitate her well;  
It overrules, and is her Master here.

It imitates her Makers Power Divine,  
And changes her sometimes, and sometimes does refine:  
It does, like Grace, the fallen Tree restore  
To its blest state of Paradise before:  
Who would not joy to see his conquering hand  
O'r all the vegetable World command?  
And the wild Giants of the Wood receive

What Law he's pleas'd to give?  
He bids th' ill-natur'd Crab produce  
The gentle Apples Winy Juice;  
The golden Fruit that worthy is  
Of *Galatea's* purple kifs;  
He does the savage Hawthorn teach  
To bear the Medlar and the Pear,  
He bids the rustick Plum to rear  
A noble Trunk, and be a Peach,  
Ev'n *Daphnes* coynefs he does mock,  
And weds the Cherry to her stock,

Though



Though she refus'd *Apollo's* suit ;  
Ev'n she, that chaste and Virgin-Tree  
Now wonders at her self, to see  
That she's a Mother made, and blushes in her fruit.

II.

Methinks I see great *Dioclesian* walk  
In the *Salonian* Gardens noble shade,  
Which by his own Imperial hands was made :  
I see him smile methinks, as he does talk  
With the Ambassadors who come in vain,  
T' entice him to a Throne again :  
If I, my Friends (said he,) should to you show  
All the delights, which in these Gardens grow ;  
'Tis likelier much, that you should with me stay,  
Than 'tis that you should carry me away :  
And trust me not, my Friends, if every day,  
I walk not here with more delight,  
Than ever after the most happy fight,  
In Triumph to the Capitol I rod,  
To thank the gods, and to be thought my self almost a god.

Chertsea, 16  
Aug. 1666.

*Abraham Cowley.*

Though the world is full of sin  
By a line that half and Virgin  
Now wound a better life  
That first a mortal wound

Medals I receive of grace  
In the temple of the heart  
Which by the power of love  
I feel in the heart of man  
With the angels who are  
I am not alone in this  
If my friends (I feel) should to  
All the world is in the heart  
The better man, the more  
Then is that the heart  
And with me in the heart  
I walk in the heart of man  
To the heart of man  
In the heart of man  
To the heart of man

George  
18

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*Bird-Lime* c. 21, f. 20. c. 26, f. 18.  
*Birch* c. 35, f. 14.  
*Biting* c. 23, f. 4.  
*Biscay* c. 25, f. 1. c. 33, f. 15.  
*Black v. Colour, Cherry* c. 10, f. 3.  
*Black-Thorn v. Thorn.*  
*Blanching* c. 8, f. 4.  
*Blast* c. 27, f. 5.  
*Blocks*



# The Table.

<b>Black</b> c.4, f.15. v. <b>Pullies</b> , <b>Sbi-</b>	<b>Burwing</b> c.21, f.16, 19. c.22, f.15.
<b>vers.</b>	c.33, f.5.
<b>Blossom</b> c.14, f.2, 4. c.15, f.2.	<b>Burying</b> c.31, f.3. v. <b>Sepulture.</b>
c.26, f.21. c.32, f.19. c.35, f.21. v.	<b>Bushing</b> c.3, f.12.
<b>Flower.</b>	<b>Button-moulds</b> c.31, f.3.
<b>Blood</b> c.7, f.6. c.27, f.6.	<b>Buyer</b> c.30, f.32. c.31, f.16. c.33,
<b>Bleeding</b> c.22, f.6.	f.16.
<b>Boards</b> c.18, f.2. c.23, f.1. c.30,	abiv
f.15. c.31, f.2, 3. v. <b>Planks.</b>	c
<b>Boaring</b> c.30, f.24, 36. c.31, f.5.	<b>Cabinets</b> c.6, f.3. c.7,
<b>Boates</b> c.19, f.4. c.20, f.17. c.31,	f.4. c.8, f.14. c.11, f.2. c.21,
f.6, 9, 10.	f.22. c.26, f.6. c.31, f.34, 35.
<b>Bobbins</b> c.26, f.6.	<b>Cablicia</b> c.32, f.19. v. <b>Laws.</b>
<b>Boggs</b> c.18, 19, f.1, 2. c.20, f.10,	<b>Caffe</b> v.16, f.10.
26. c.22, f.13. c.24, f.14. c.28, f.1.	<b>Cages</b> c.20, f.17.
c.31, f.15. v. <b>Aquatic.</b>	<b>Calves</b> c.28, f.8.
<b>Bolis</b> c.20, f.18. v. <b>Barrs</b> , <b>dores.</b>	<b>Canaries</b> c.26, f.22.
<b>Bones</b> c.4, f.15. c.6, f.4. c.25, f.11.	<b>Candles</b> c.13, f.2. c.22, f.11, 16.
<b>Books</b> c.5, f.2.	<b>Candle-wood</b> c.22, f.11.
<b>Bordurers</b> c.29, f.2.	<b>Candy</b> c.24, f.12.
<b>Bottles</b> c.14, f.4.	<b>Canker</b> c.27, f.12.
<b>Boughs</b> c.29, f.4, 5, 6.	<b>Canns</b> c.20, f.29.
<b>Boundaries</b> c.28, f.7. c.34, f.3,	<b>Canoos</b> c.30, f.6.
4, 5.	<b>Carbuacle</b> c.3, f.17.
<b>Bowls</b> c.26, f.8, 17.	<b>Carduus</b> c.28, f.9.
<b>Bows</b> c.4, f.5. c.8, f.4. c.9, f.1. c.10,	<b>Carkeff</b> c.31, f.19. vide <b>Frame.</b>
f.2. c.15, f.2. c.26, f.8.	<b>Carpenter</b> c.6, f.4. c.7, f.5. c.9, f.1.
<b>Box</b> c.3, f.17. c.21, f.16. c.22, f.15.	c.26, f.22. c.30, f.33. c.31, f.19.
c.26, f.5, 10. c.30, f.1. c.31, f.3, 15.	<b>Cart</b> c.12, f.2. c.18,
c.32, f.19.	<b>Cart-} Wright</b> f.8. c.20, f.29.
<b>Boxes</b> c.5, f.2. c.14, f.4. c.20, f.29.	c.22, f.15. c.28, f.4.
c.21, f.10. c.22, f.15.	<b>Carving</b> c.4, f.15. c.14, f.4. c.18,
<b>Bratmani</b> c.35, f.10.	f.2. c.22, f.15. c.31, f.4. vide <b>Gra-</b>
<b>Brambles</b> c.21, f.3. c.31, f.24, 37.	<b>ver</b> , <b>Sculptor.</b>
<b>Branches</b> c.14, f.1.	<b>Cask</b> c.7, f.5. c.20, f.19.
<b>Brasile</b> c.31, f.2.	<b>Cast</b> c.31, f.26. vide <b>Billet.</b>
<b>Bread</b> c.5, f.2. c.7, f.5.	<b>Castle</b> c.30, f.7.
<b>Bridge</b> c.24, f.13. c.31, f.7.	<b>Cattel</b> c.3, f.7, 12, 17. c.4, f.11, 15.
<b>Broomes</b> c.16, f.2. c.17, f.3. c.18,	c.6, f.4. c.9, f.9. c.18, f.2. c.20, f.21,
f.8. c.21, f.14, 15. c.28, f.10. c.32,	26. c.21, f.9, 10, 22. c.26, f.9, 13,
f.19.	14, 20. c.27, f.7, 21. c.28, f.4, 7,
<b>Browse</b> c.28, f.5. c.29, f.4. c.31,	c.29, f.8, 9. c.31, f.23. c.33, f.6, 7,
f.23.	8, 17, 11. c.34, f.18, 19, 23, 26.
<b>Bruscum</b> c.11, f.2.	vide <b>Fodder</b> , <b>Cropping.</b>
<b>Brush</b> c.28, f.4. c.31, f.34. vide	<b>Caterpillar</b> c.27, f.20.
<b>Bavin.</b>	<b>Catholicon</b> c.21, f.16.
<b>Budds</b> c.27, f.21. c.29, f.1, 6. c.30,	<b>Cato</b> c.24, f.5.
f.20. c.32, f.12.	<b>Casar</b> c.35, f.17.
<b>Bucklers</b> c.31, f.15. v. <b>Targets.</b>	<b>Cedar</b> c.22, f.19. c.24, f.3, 14.
<b>Building</b> c.3, f.17. c.19, f.4. c.31,	f
f.19. c.35, f.18.	c.26,

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c. 26, f. 19, c. 30, f. 6, 12. c. 31, f. 15.	<b>Clothes</b>	c. 26, f. 22.
<b>Ceiling</b> c. 31, f. 16. vide <b>Lathea</b> .	<b>Clover</b>	c. 26, f. 22.
<b>Celastrus</b> c. 25, f. 13.	<b>Edarthes</b> c. 8, f. 4. c. 20, f. 17. v. 22, f. 15.	
<b>Chalk</b> c. 5, f. 1. c. 8, f. 2.	<b>Coales</b> c. 3, f. 17. c. 4, f. 15. c. 6, f. 4.	
<b>Chappel</b> c. 30, f. 6.	c. 7, f. 5. c. 14, f. 4. c. 16, f. 2. v. 17, f. 5. c. 18, f. 8. c. 19, f. 5. c. 20, f. 15,	
<b>Chapman</b> vide <b>Bayer</b> .	29. c. 22, f. 16. c. 23, f. 1. c. 25, f. 3.	
<b>Chases</b> vide <b>Parky</b> .	c. 26, f. 2, 21. c. 28, f. 9. c. 23, f. 11,	
<b>Chastity</b> c. 20, f. 8, 28.	15. c. 31, f. 4, 23, 24, 25, 26, 29,	
<b>Chaucer</b> c. 30, f. 12.	30, 31.	
<b>Chayres</b> c. 20, f. 17. c. 25, f. 5.	<b>Coating</b> c. 31, f. 7. vide <b>Preser-</b>	
<b>Chequers</b> c. 10, f. 1.	<b>ving.</b>	
<b>Cherry-tree</b> c. 10, f. 3. c. 35, f. 12.	<b>Cocco</b> c. 16, f. 7.	
c. 7, f. 4. c. 21, f. 22. c. 24, f. 2. c. 26, f. 25. c. 33, f. 14.	<b>Coffin</b> c. 24, f. 12, 13. c. 25, f. 2.	
<b>Chest-Shire</b> c. 27, f. 13.	<b>Cold</b> c. 22, f. 15. c. 24, f. 7. c. 25, f. 11.	
<b>Chest-Nuts</b> c. 5, f. 1. c. 7, f. 4. c. 8, f. 1.	c. 30, f. 25. c. 32, f. 19.	
c. 28, f. 1, 2, 6. c. 30, f. 7. c. 31, f. 15.	<b>College</b> c. 35, f. 10.	
c. 32, f. 19.	<b>Colique</b> c. 26, f. 4, 18, 21. vide	
<b>Cheffe-men</b> c. 26, f. 6.	<b>Stone.</b>	
<b>Chefts</b> c. 24, f. 16. c. 26, f. 21.	<b>Colts</b> c. 28, f. 8.	
<b>Chezill</b> c. 29, f. 2. vide <b>Tools</b> .	<b>Column</b> c. 3, f. 17. c. 30, f. 36. c. 31,	
<b>Chimney</b> c. 31, f. 23. vide <b>Fire</b> ,	f. 5, 15. vide <b>Posts</b> .	
<b>Fuel</b>	<b>Combs</b> c. 21, f. 10. c. 26, f. 6.	
<b>Chips</b> c. 4, f. 3. c. 22, f. 15. c. 26, f. 21.	<b>Common</b> c. 28, f. 8. c. 33, f. 7. vide	
c. 28, f. 7.	<b>Inclosure.</b>	
<b>Choaking</b> c. 32, f. 35.	<b>Compost</b> c. 1, f. 4. c. 7, f. 1. c. 8, f. 1.	
<b>Choppines</b> c. 25, f. 2.	c. 9, f. 8. c. 22, f. 4, 9. c. 25, f. 10.	
<b>Church</b> c. 17, f. 5. c. 35, f. 12. vide	c. 26, f. 15, 20. v. <b>Dung, Soile.</b>	
<b>Sepulchres.</b>	<b>Concretions</b> c. 31, f. 20.	
<b>Church-yards</b> c. 29, f. 6.	<b>Cones</b> c. 22, f. 1, 4. c. 24, f. 1. vide	
<b>Chymists</b> c. 31, f. 29.	<b>Nuts.</b>	
<b>Cinnamon</b> c. 26, f. 22.	<b>Conflagration</b> c. 35, f. 2. vide	
<b>Circles</b> c. 3, f. 6. c. 16, f. 4. c. 35, f. 3.	<b>Burning.</b>	
<b>Citron</b> c. 8, f. 2. c. 11, f. 1, 2. vide	<b>Coniales</b> c. 21, f. 1. c. 27, f. 7.	
<b>Tablet.</b>	<b>Consecration</b> c. 35, f. 14.	
<b>Cities</b> c. 35, f. 10.	<b>Conserve</b> c. 25, f. 11.	
<b>Civility</b> c. 35, f. 1.	<b>Consort</b> c. 29, f. 10.	
<b>Clay</b> c. 1, f. 1. c. 3, f. 5. c. 22, f. 3. c. 27, f. 8. c. 30, f. 12. c. 31, f. 8. c. 32, f. 8, 15.	<b>Consul</b> c. 32, f. 29. vide <b>Officers.</b>	
<b>Clap-board</b> c. 3, f. 17.	<b>Consumption</b> c. 10, f. 2. c. 16, f. 8.	
<b>Cleargy</b> c. 28, f. 2.	<b>Contemplation</b> c. 35, f. 5, 10, 20.	
<b>Cleaving</b> c. 31, f. 6.	<b>Contempires</b> c. 25, f. 2.	
<b>Cleft-wood</b> c. 31, f. 27.	<b>Contexture</b> c. 30, f. 1.	
<b>Climat</b> c. 3, f. 4. c. 22, f. 5. c. 26, f. 22.	<b>Conversion</b> c. 35, f. 3.	
vide <b>Aspect, Situation.</b>	<b>Cooming</b> c. 31, f. 31.	
<b>Clipping</b> c. 9, f. 11. c. 21, f. 8, 14.	<b>Cooper</b> c. 3, f. 17. c. 6, f. 4. c. 9, f. 1. c. 17,	
c. 24, f. 6, 7. c. 25, f. 9.	f. 5. c. 20, f. 18, 19, 24.	
	<b>Coorbs</b> c. 29, f. 5.	
	<b>Coppces</b> c. 3, f. 8, 16. c. 4, f. 1. c. 7,	
	f. 2. c. 10, f. 3. c. 16, f. 1. c. 17, f. 3, 4,	
	5, 6.	

## The Table.

**C** 56.c.18, f.1, 2. c.20, f.14, 26.  
c.24, f.6. c.28, f.1.c.31, f.31, 23,  
f.14, 15. c.34, f.14.  
**Corpuere** c.10, f.1.c.32, f.19.  
**Cord** c.28, f.9. c.30, f.15. c.31, f.29.  
vide **stack**.  
**Cardial** c.16, f.38.  
**Carke** c.25, f.1.  
**Corue** c.1, f.1. c.9, f.4. c.20, f.24,  
c.21, f.2, 14. v.34, f.19.  
**Corn Lands** c.4, f.9. c.6, f.3. c.18,  
f.2.  
**Cornel** c.21, f.11, 19. c.23, f.4.  
c.30, f.3. c.31, f.15.  
**Cornwall** c.22, f.13. c.34, f.18.  
**Cosmetic** c.22, f.13.  
**Cottages** c.17, f.3.  
**Cotton** c.20, f.38.  
**Cough** c.7, f.5. c.22, f.15. c.26,  
f.21.  
**Couler** c.4, f.15. c.31, f.12, 34,  
35. c.32, f.19.  
**Council** c.35, f.14.  
**Counter-scarp** c.31, f.38.  
**Count** c.31, f.29, 30.  
**Cow-dung** c.31, f.5, 23.  
**Crab-tree** c.31, f.7, 9, 10.  
**Cracks** c.8, f.4. c.31, f.34. vide  
**Clefts**.  
**Cranes** c.30, f.36. vide **Engineer**.  
**Creation** c.30, f.4.  
**Cropping** c.20, f.1, 2. vide **Cat-  
tel**.  
**Croft** c.3, f.17. c.15, f.2. c.35, f.1.  
**Cudgels** c.17, f.5. vide **Staves**.  
**Cumberland** c.22, f.13.  
**Cup-board** c.26, f.22.  
**Cupps** c.25, f.2. c.27, f.9.  
**Curiosity** c.26, f.12.  
**Currer** c.19, f.5.  
**Cushions** c.20, f..  
**Customes** c.29, f.10. c.33, f.14.  
vide **Laws**.  
**Cutting** c.3, f.38, 13. c.9, f.5. c.17,  
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23, 26. c.21, f.7. c.24, f.6. c.25,  
f.21. c.26, f.26. c.28, f.7. c.29,  
f.2, 3, 6. c.32, f.19. vide **Fel-  
ling**.  
**Cyder** c.21, f.22.



# The Table.

<i>Diuretic</i>	c.16, f.10.	<i>Egg</i>	c.30, f.30.
<i>Docks</i>	c.21, f.7.	<i>Eights</i>	c.20, f.24.
<i>Dodona</i>	c.35, f.7, 15. vide	<i>Elder</i>	c.3, f.17 c.16, f.10 c.21, f.9, 15. c.30, f.20. c.31, f.15, 37.
<i>Groves.</i>	& p. 277.		c.32, f.19.
<i>Doggs</i>	c.34, f.16.	<i>Eleſuary</i>	c.26, f.21.
<i>Dog-wood</i>	c.21, f.19.	<i>Elm</i>	c.3, f.5 c.4, 16, f.10 c.21, f.8, 12. c.27, f.13 c.28, f.3 c.29, f.2, 3, 6. c.30, f.11. c.31, f.15, 26. c.32, f.1, 19 c.34, f.9, 15, 24.
<i>Dores</i>	c.4, f.15. c.22, f.15. c.23, f.1. c.24, f.13 c.26, f.17 c.31, f.4, 8. vide <i>Gates.</i>	<i>Elogies</i>	c.31, f.36.
<i>Dorſars</i>	c.20, f.29.	<i>Elyſium</i>	c.35, f.10.
<i>Dotards</i>	c.4, f.14 c.20, f.26 c.29, f.6 c.31, f.23. vide <i>Decay.</i>	<i>Emulſions</i>	c.22, f.15.
<i>Downs</i>	c.34, f.23.	<i>Encloſures</i>	c.33, f.7 c.34, f.3, 5.
<i>Dram</i>	c.22, f.2. vide <i>Firr.</i>	<i>Encouragements</i>	c.34, f.22.
<i>Draining</i>	c.19, f.5.	<i>Encroachments</i>	c.34, f.9.
<i>Dreams</i>	c.35, f.5, 7.	<i>Engines</i>	c.3, f.9. c.31, f.22. vide
<i>Dreſſars</i>	c.4, f.15 c.5, f.2.	<i>Cranes.</i>	
<i>Dreſſing</i>	c.9, f.3 c.20, f.11, 22, 24. c.29, f.5.	<i>Epilepſie</i>	c.14, f.4.
<i>Drink</i>	c.21, f.22 c.22, f.15 c.31, f.37 c.35, f.18.	<i>Enthuſiaſm</i>	c.35, f.6, 7.
<i>Dripping</i>	c.22, f.1 c.28, f.6 c.34, f.14. vide <i>Shade.</i>	<i>Enzina</i>	c.25, f.1, 3.
<i>Droſy</i>	c.21, f.16 c.26, f.21.	<i>Eriſichthon</i>	c.35, f.15.
<i>Druids</i>	c.30, f.8 c.35, f.2, 9, 15. vide <i>Dryad.</i>	<i>Errors</i>	c.24, f.5.
<i>Drumms</i>	c.8, f.4.	<i>Eſpaliers</i>	c.6, f.2. c.18, f.2 c.20, f.2 c.25, f.9.
<i>Dryad, vide Druids.</i>		<i>Æſculus, vide Oak.</i>	
<i>Dry-trees</i>	<i>Introduç.</i> 4.	<i>Effex</i>	c.31, f.29.
<i>Dung, vide Compoſt.</i>		<i>Eſtovers</i>	c.33, f.14. vide <i>Laws.</i>
<i>Duration</i>	c.31, f.3, 15. vide	<i>Eternity</i>	c.24, f.17 c.30, f.4.
<i>Age.</i>		<i>Eugh</i>	c.26, f.8. c.30, f.14. vide
<i>Duſt</i>	c.32, f.3.	<i>Tew.</i>	
<i>Dwarfs</i>	c.29, f.6.	<i>Evonymus</i>	c.32, f.19.
<i>Dies</i>	c.33, f.17 c.8, f.4 c.19, f.5.	<i>Excrements</i>	c.30, f.3.
<i>Dyſenterie</i>	c.10, f.2 c.14, f.4.	<i>Excreſcences</i>	c.3, f.17 c.27, f.9.

## E

<b>E</b> <i>Bony</i>	c.3, f.14 c.6, f.3. c.22, f.15. c.31, f.15, 34. vide
<i>Polishing.</i>	See alſo <i>Pomona,</i>
	c.8.
<i>Ears</i>	c.10, f.2 c.18, f.8. vide
<i>Deafneſs.</i>	
<i>Ear-wigs</i>	c.27, f.15. vide <i>In-</i>
<i>ſects.</i>	
<i>Earth</i>	<i>Introduç.</i> 6. 7.
<i>East</i>	c.31, f.15 c.32, f.13. vide
<i>Winds.</i>	

<i>Extravagance</i>	c.31, f.28.
<i>Eyes</i>	c.18, f.8 c.25, f.11.

## F

<b>F</b> <i>Aggots</i>	c.21, f.19 c.28, f.9.
	c.31, f.27, 28, 31. vide <i>Ba-</i>
<i>vin.</i>	
<i>Famine</i>	c.6, f.4.
<i>Farcy</i>	c.16, f.10. vide <i>Horſe.</i>
<i>Farmer</i>	c.34, f.23.
<i>Father</i>	c.30, f.20.
<i>Faunus</i>	c.35, f.6.
<i>Feaſts</i>	

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*Faests* c.30,f.7.  
*Favour* c.20,f.29.c.21,f.16.  
*February* c.27,f.20.c.29,f.4.  
*Felling* c.3,f.13,15.c.4,f.14.  
     c.6,f.4.c.17,f.4.c.19,f.1,3.c.28,  
     f.2,3,4,7,8.c.29,f.6.c.30,f.1,2,3,  
     24,25,26,27,28,31,34,36.  
     c.31,f.1,3,23.c.32,f.7.c.33,f.7,  
     8,9,14,16,17.c.34,f.23.c.35,  
     f.4,15. vide *Cutting*.  
*Femal* c.22,f.2.4. vide *Sex*.  
*Fences* c.4,f.12.c.6,f.2.c.20,  
     f.6,7.c.21,f.1,3,6,10,13,16,20.  
     c.26,f.10.c.28,f.4,7.c.29,f.5,  
     10.c.32,f.13.c.33,f.14.c.34,f.3,  
     5,6,7,8,24. p.276.  
*Fermentation* c.16,f.4.  
*Fern* c.27,f.3.  
*Feet* c.20,f.16.c.24,f.2.c.30,  
     f.5,7.  
*Fibers* c.3,f.6.c.24,f.2.  
*Figues* c.20,f.16.c.24,f.2.c.30,  
     f.5,7.  
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     13,14.c.22,f.15.c.33,f.1.c.24,  
     f.4.c.30,f.27.c.31,f.3,9,13,15,  
     17,34.c.34,f.7.  
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*Fishers* c.5,f.2.c.25,f.2.  
*Flanders* c.34,f.17.  
*Flayle* c.26,f.17.  
*Flecher* c.15,f.2.c.16,f.2.  
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     *Knee-Timber*.  
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     f.12,21,22.c.26,f.9.c.29,f.4,5,  
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     c.15,f.2.c.16,f.2.c.17,f.5.c.18,  
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     *ters*.  
*Galls* c.3,f.17.  
*Game* c.35,f.2.  
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<i>Hemroides</i> c. 31, f. 16, 19.	
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<i>Hops</i> c. 18, f. 8. c. 29, f. 29. c. 22,	
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	<i>Inlaying</i> c. 8, f. 4. c. 19, f. 5. c. 26,
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<i>Italy</i>	c.25, f.1.c.24, f.17.	<i>Laurus-Tinus</i>	c.25, f.13.
<i>Itch</i>	c.19, f.5.	<i>Lawnes</i>	c.34, f.15.
<i>Juice</i>	c.16, f.3, 4, 5, 6, 7, 8, 11.	<i>Laws</i>	c.24, f.13.c.26, f.22.c.27, f.3, 8.c.31, f.26.c.33, f.1, 3.c.34, f.29.
vide <i>Sap.</i>		<i>Lawson</i>	c.29, f.5.
<i>July</i>	c.28, f.8.c.30, f.34.	<i>Layers</i>	c.2, f.8.c.4, f.4.c.9, f.5.
<i>June</i>	c.31, f.32.	c.18, f.6. c.22, f.12. c.23, f.3.	
<i>Juniper</i>	c.22, f.15.c.26, f.19.	c.25, f.10, 11, 12, 15. c.26, f.2, 26.	
c.30, f.10.c.32, f.19.		<i>Leather</i>	c.25, f.14.
<i>Ivy</i>	c.27, f.9.	<i>Leaves</i>	c.3, f.2. c.4, f.15.c.5, f.2.c.6, f.4. c.7, f.1, 5. c.8, f.1, 4. c.9, f.9, 10. c.11, f.11. c.13, f.2. c.19, f.5. c.26, f.26. c.26, f.18. c.29, f.8.c.31, f.28.c.32, f.7.c.33, f.2.c.35, f.21.
<b>K</b>		<i>Lentiscus</i>	c.25, f.12.
<b>K</b> <i>Eele</i>	c.31, f.15. vide <i>Ship-ping.</i>	<i>Levity</i>	c.31, f.18, 20.
<i>Kent</i>	c.30, f.14.c.33, f.11.	<i>Libanus</i>	c.24, f.3.
<i>Kermes</i>	c.25, f.5.	<i>Lieutenants</i>	c.34, f.16. vide
<i>Kernel</i>	c.1, f.2.c.21, f.4, 10.c.22, f.1, 15.c.24, f.23.	<i>Officers.</i>	
<i>Keyes</i>	c.6, f.1, 2.c.11, f.1.	<i>Lightning</i>	c.27, f.11.c.35, f.15.
<i>Keyle-Pinns</i>	c.20, f.29.	<i>Lights</i>	c.35, f.8.
<i>Kidding</i> vide <i>Bavines.</i>		<i>Lignum</i> { <i>fossile</i> c.31, f.20. <i>vita.</i> c.25, f.13.	
<i>Kidnies</i>	c.7, f.5.	<i>Lime-tree</i>	c.1, f.1.c.14, 29, f.4. c.30, f.4, 10.c.31, f.15, 30.
<i>Kind</i> vide <i>Species.</i>		<i>Lime</i>	c.31, f.8.c.32, f.19.
<i>Kirfe</i>	c.30, f.29, 31. vide <i>Cutting.</i>	<i>Linnen</i>	c.3, f.17.c.7, f.3.
<i>Knee-Timber</i>	c.29, f.10. vide <i>Courbs, Flexures.</i>	<i>Lincolne-shire</i>	c.34, f.18.
<i>Knife</i>	c.20, f.29.c.29, f.2.	<i>Liquors</i>	c.1, f.1, 4.c.16, f.3, 4, 5, 6, 7, 8, 11.c.35, f.23. vide
<i>Knotts</i>	c.11, f.2.c.27, f.1.c.29, f.5.c.30, f.20.c.31, f.9, 10, 15. vide <i>Damasking, Grain.</i>	<i>Juice, Sap, Tapping, Imbibition.</i>	
<b>L</b>		<i>Load</i>	c.30, f.34.c.31, f.18. vide
<b>L</b> <i>Acq.</i>	c.25, f.5. vide <i>Gumm.</i>	<i>Timber.</i>	
<i>Ladder</i>	c.6, f.4.	<i>Loame</i>	c.31, f.8, 24. vide <i>Soile.</i>
<i>Lamp-black</i>	c.22, f.16.	<i>Loggs</i>	c.31, f.28.
<i>Lancaster</i>	c.22, f.13.	<i>London</i>	c.24, f.16.c.30, f.35.c.31, f.27, 29, 31.
<i>Larch</i>	c.22, f.10, 15.c.23, 24, f.13.c.25, f.13.c.30, f.4. c.31, f.15.	<i>Lopping</i>	c.4, f.12.c.6, f.4.c.13, f.3. c.20, f.26. c.27, f.13. c.29, f.2, 3, 4, 5.c.33, f.14, 15. vide <i>Pruning.</i>
<i>Laserpitium</i>	c.22, f.5.	<i>Lotus</i>	c.23, f.4.c.26, f.22.c.30, f.4. c.31, f.15.
<i>Lafts</i>	c.20, f.29. vide <i>Shoo-maker.</i>	<i>Love</i>	c.30, f.5.c.35, f.12.
<i>Latbes</i>	c.3, f.17.c.22, f.15.c.31, f.16.	<i>Lucus</i>	c.35, f.2. vide <i>Groves.</i>
<i>Lattices</i>	c.20, f.17, 29.	<i>Lungs</i>	c.22, f.15.c.24, f.13.
<i>Latona</i>	c.26, f.18.		<i>Luxury</i>
<i>Laurell</i>	c.26, f.23.c.30, f.4.c.35, f.5, 7.		

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c.8, f.4.

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c.30, f.21.

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c.30, f.18. vide Oak.

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c.28, f.4 c.29, f.4.

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c.8, f.2. vide Soile.

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c.8, f.2.

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c.28, f.10.

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c.27, f.23 c.30, f.7, 13 c.31, f.8.

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c.27, f.22.

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Moulding

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c.27, f.17.

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c.11, f.1.

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f.12 c.26, f.6 c.31, f.13. See Po-

mona c.8.

Myrtils

c.24, f.5 c.25, f.11, 14.

c.30, f.5.

Mysterie, vide Art, Trade.

N

**N** Ailes

c.24, f.16.

Names

c.35, f.14.

Nature

c.22, f.6 c.30, f.18, 36.

Naumachia

c.23, f.1.

Navy

c.33, f.11.

Nests

c.31, f.25.

Negligence

c.24, f.3, 4 c.29, f.9.

Nemus

c.35, f.2. vide Lucus.

Nerves

c.26, f.4.

h

Netts



# The Table.

<i>Netts</i>	c.27, f.23.	<i>Ornament</i>	c.29, f.4. c.35, f.21.
<i>Net-work</i>	c.20, f.25.	<i>Ovens</i>	c.31, f.23.
<i>New-England</i>	c.22, f.2, 16. c.25, f.1. c.34, f.12.	<i>Oyle</i>	c.3, f.12, 17. c.5, f.2. c.6, f.4. c.8, f.4. c.26, f.21. c.27, f.23. c.31, f.15, 34.
<i>Nitellina</i>	c.20, f.3.	<i>Oziers</i>	c.20, f.17, 22. c.33, f.3.
<i>Nitts</i>	c.21, f.19.	<b>P</b>	
<i>Noah</i>	c.30, f.12. vide <i>Arke</i> .		
<i>Norfolk</i>	c.30, f.10, 11.	<i>Pales</i>	c.3, f.17. c.21, f.8. c.22, f.15.
<i>North</i>	c.31, f.14. c.32, f.13. vide <i>Wind</i> .	<i>Palmeto</i>	c.16, f.7. c.20, f.8. c.30, f.7, 30.
<i>Northampton-shire</i>	c.34, f.18.	<i>Pailer</i>	c.20, f.29.
<i>Northumberland</i>	c.22, f.3.	<i>Painter, Painting</i>	c.8, f.4. c.20, f.15. c.31, f.34.
<i>Norway</i>	c.22, f.16. c.30, f.36.	<i>Palestina</i>	c.23, f.2.
<i>Nose-gaies</i>	c.25, f.15.	<i>Palisade</i>	c.21, f.20. c.25, f.2. c.26, f.4.
<i>Notching</i>	c.31, f.26, 28.	<i>Palſe</i>	c.3, f.17. c.26, f.21.
<i>Novelty</i>	c.35, f.24.	<i>Palinurus</i>	c.21, f.11.
<i>November</i>	c.28, f.4.	<i>Palmeto</i>	c.31, f.15.
<i>Nursery</i>	Intr. 8. c.3, f.3. c.4, f.4. c.6, f.2. c.9, f.3. c.18, f.6. c.22, f.2. vide <i>Seminary</i> .	<i>Panacea</i>	c.26, f.21.
<i>Nut-Crackers</i>	c.26, f.6, 8.	<i>Pantberine</i>	c.11, f.2.
<i>Nutmegs</i>	c.26, f.22.	<i>Paper</i>	c.31, f.35. c.35, f.12.
<i>Nutts</i>	c.17, f.1. c.22, f.1. 4, 6. c.30, f.7.	<i>Paradise</i>	c.35, f.5.
<i>Nutrimēt</i>	c.31, f.9. c.35, f.21.	<i>Paralysis</i>	vide <i>Palſe</i> .
<i>Nux Vescicaria</i>	c.26, f.22.	<i>Parir</i>	c.25, f.15.
<i>Nymph</i>	c.35, f.14.	<i>Parke</i>	c.26, f.14. c.29, f.4. c.33, f.8, 9, 10. c.24, f.1, 2, 23. c.35, f.2, 10, 16. vide <i>St. James's</i> .
<b>O</b>		<i>Parts</i>	c.32, f.19.
<i>Oares</i>	c.5, f.2. c.6, f.4.	<i>Pastorals</i>	c.35, f.10. vide <i>Scenes</i> .
<i>Oates</i>	c.4, f.6. c.9, f.5. c.22, f.4.	<i>Pasture</i>	c.1, f.1. c.4, f.9. c.31, f.2. c.32, f.15. c.33, f.9. c.34, f.18, 19, 21, 23.
<i>October</i>	c.30, f.28. c.31, f.3.	<i>Patriarchs</i>	c.35, f.2.
<i>Odoriferous Wood</i>	c.31, f.15.	<i>Pattens</i>	c.20, f.29.
<i>Offal</i>	c.28, f.9.	<i>Paving</i>	c.22, f.15.
<i>Officers</i>	c.3, f.1. c.6, f.3. c.16, f.10. c.21, f.6, 9. c.22, f.15. c.28, f.2, 3, 5. c.29, f.3, 4, 5, 10.	<i>Peach</i>	c.24, f.2.
<i>Oak</i>	c.3. c.10, f.14. c.30, f.2, 4, 5, 11, 12, 13, 15, 16, 17, 18, 31, 36. c.31, f.3, 12, 13, 15, 17, 23, 28, 37. c.32, f.1, 7, 19. c.34, f.1, 9, 11, 15. c.35, f.6, 9.	<i>Pea-Cocks Tayle</i>	c.11, f.1.
<i>Olive</i>	c.6, f.3. c.22, f.15. c.25, f.12. c.27, f.21. c.30, f.4, 5.	<i>Pear-tree</i>	c.21, f.22. c.30, f.2, 3, 30. c.31, f.3, 12, 13, 15, 34. vide <i>Pears</i> . Also <i>Pomona</i> c.8.
<i>Oracles</i>	c.35, f.6, 7.	<i>Peate</i>	c.31, f.23. vide <i>Turfe</i> .
<i>Orange-tree</i>	c.2, f.5. c.26, f.22, 23.	<i>Petten</i>	c.31, f.11. vide <i>Vaines</i> .
<i>Orators</i>	c.35, f.10, 13.	<i>Pedegre</i>	c.34, f.17.
<i>Orchard</i>	c.20, f.1. s. 29, f.6.	<i>Peelings</i>	c.20, f.18.
<i>Organ</i>	c.31, f.13. vide <i>Musical Instruments</i> .	<i>Rembroke-shire</i>	c.22, f.13.
		<i>Penitence</i>	c.35, f.5.
		<i>Pepper</i>	

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<b>Pepper</b>	c.8, f.4. c.25, f.14. c.26, f.21, 22.	f.23. c.32, f.5, 8, 10. c.33, f.2, 12. c.34, f.6, 21, 23, 29. c.35, f.19.
<b>Perches</b>	c.20, f.8, 26, 29. c.28, f.10.	<b>Plants</b> c.32, f.4.
vide <b>Poles</b> .		<b>Plast-poles</b> c.28, f.7.
<b>Percolation</b>	c.16, f.7.	<b>Plashing</b> c.4, f.12. c.21, f.8, 9. vide
<b>Perfume</b>	c.26, f.4, 19, 23.	<b>Pruning</b> .
<b>Pestles</b>	c.21, f.19. c.26, f.6.	<b>Plaster</b> c.22, f.15. c.27, f.12.
<b>Petrification</b>	c.31, f.21. vide	c.31, f.19, 15. vide <b>Ceiling</b> ,
<b>Stones</b> .		<b>Lathes</b> .
<b>Phanatics</b>	c.35, f.6.	<b>Platanus</b> c.23, f.2, 3. c.30, f.4, 5, 6.
<b>Philistines</b>	c.33, f.6.	c.35, f.10. vide <b>Xerxes</b> .
<b>Philosophers</b>	c.23, f.2.	<b>Plough</b> c.6, f.4. c.8, f.2. c.20, f.4.
<b>Philosophy</b>	c.34, f.21. c.35, f.10,	c.29, f.10. c.34, f.1, 2. p. 277.
20.		<b>Plough-boote</b> c.31, f.33.
<b>Phillyrea</b>	c.25, f.8.	<b>Plum-trees</b> c.24, f.2. c.30, f.30.
<b>Phlegme</b>	c.26, f.18.	c.31, f.12, 35. See <b>Pomona</b> ,
<b>Φυλλομεγνία</b>	c.29, f.8. vide	c.8.
<b>Leaves</b> .		<b>Poets</b> c.26, f.26. c.35, f.7, 10.
<b>Physical-uses</b>	c.29, f.5. vide <b>Ma-</b>	<b>Pollard</b> c.6, f.4. c.18, f.1. c.29,
<b>dicine</b> .		f.3, 6.
<b>Pictures</b>	c.26, f.21.	<b>Poles</b> c.6, f.4. c.7, f.2, 3, 5.
<b>Pikes, Pike-staves</b>	c.6, f.2, 4.	c.17, f.3, 5. c.19, f.1, 5. c.22, f.15.
c.20, f.4, 9, 15, 19.		c.24, f.12. c.28, f.10. vide <b>Hops</b> ,
<b>Piles</b>	c.3, f.17. c.19, f.5. c.22, f.15,	<b>Perches</b> .
c.23, f.1. c.31, f.3, 4.		<b>Policy</b> c.26, f.22.
<b>Pillows</b>	c.20, f.8.	<b>Politicians</b> c.35, f.12.
<b>Piceaster</b>	c.22, f.10.	<b>Polking</b> c.9, f.7. vide <b>Heading</b> .
<b>Pinafter</b>	c.22, f.1, 7.	<b>Palisbing</b> c.6, f.3. c.8, f.2. c.11, f.2.
<b>Pine</b> Intro. 8. c.2, f.8, c.27, f.1,		c.22, f.15. c.26, f.6. c.31, f.15, 34,
2, 4, 5, 7, 8, 12, 13, 15, 16. c.24,		35.
f.4.		<b>Palypus</b> c.25, f.11.
<b>Pinus</b> c.23, f.4. c.24, f.16. c.26,		<b>Poore</b> c.21, f.22.
f.8, 17. c.31, f.15.		<b>Pores</b> c.30, f.20, 21.
<b>Pipes</b> c.21, f.22. c.23, f.4. c.26, f.6.		<b>Poplar</b> c.16, f.10. c.18, f.1, 7, 8.
c.30, f.36. c.31, f.13.		c.28, f.1. c.30, f.10. c.31, f.15. c.33,
<b>Pismires</b> c.27, f.19. vide <b>Ants</b> .		f.19.
<b>Pitch</b> c.21, f.16. c.22, f.15, 16.		<b>Portcullis</b> c.31, f.7.
c.31, f.7, 8, 15.		<b>Portion</b> c.24, f.12. c.34, f.17.
<b>Pith</b> c.30, f.20, 29. c.32, f.19.		<b>Posterity</b> c.24, f.3.
<b>Pitts</b> c.3, f.6.		<b>Pots</b> c.26, f.8. c.31, f.15. vide
<b>Pitty</b> c.29, f.1.		<b>Columns</b> .
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vide <b>Situation, Place</b> .		<b>Pots</b> c.31, f.33.
<b>Plague</b> c.22, f.15. c.26, f.21.		<b>Poultry</b> c.3, f.17. c.9, f.9.
<b>Plank</b> c.11, f.2. c.24, f.12. c.25,		<b>Powder</b> c.6, f.4. c.16, f.2.
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8. c.18, f.4. c.19, f.1, 3. c.20,		f.28. vide <b>Prophets</b> .
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22. c.28, f.1. c.29, f.1, 9. c.30,		<b>Prices</b> c.30, f.28. vide <b>Sal.</b>
1. c.31, f.1.		<b>Priming</b>

# The Table.

*Priming* vide *Painting*.  
*Principal-Timber* c.31, f.19. vide  
*de Timber*.  
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*Prophets* c.35, f.7.  
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*Scantling*.  
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*Providence* c.34, f.17. c.35, f.20,  
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*Pruning* c.20, f.22. c.22, f.6. c.25,  
 f.10. c.26, f.20, 23, 24.  
*Pruning* c.38, f.6, 7. c.29, f.1, 6,  
 10. c.32, f.19, 21. c.33, f.  
 2. c.35, f.15. vide *Arbo-*  
*rator, Polling*.  
*Psalteries* c.22, f.15. vide *Mu-*  
*sical Instruments*.  
*Pistia* c.3, f.17. c.16, f.9. c.26, f.21.  
*Pullies* c.6, f.4. c.10, f.2. c.26, f.6,  
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*Pumps* c.14, f.2. c.19, f.5. c.31, f.15.  
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*Pyracanth* c.21, f.11.  
*Pyes* c.7, f.5.

## 2

**Q***uakers* c.35, f.7.  
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*Quarter-clift* c.30, f.15.  
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*ing*.  
*Quercus* c.31, f.15, 25. vide *Oak*.  
*Quick-beam* c.15, f.1. vide *Whit-*  
*chen*.  
*Quiak-Set* c.20, f.4, 9. c.26, f.16.  
 c.31, f.7. vide *Hey-thorn*.  
*Quince* c.24, f.2. c.30, f.30.  
*Quincunx* c.20, f.6, 26. c.34,  
 f.11.

*Quincunx* c.20, f.6, 26. c.34,  
 f.11.

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*ping*.  
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*cers*.  
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*stition, Religious Houses*. c.35,  
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*ing*.  
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*Rodds* c.16, f.2.  
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*Romans* c.23, f.2.  
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*Rosen* c.22, f.16.  
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*Roofs* c.31, f.19.  
*Rooks* c.27, f.21.  
*Roots*



# The Table.

<i>Rootes</i>	<i>Intr.</i> 7, 8. c. 1. f. 1. c. 3. f. 5, 6, 10, 14, 17. c. 4. f. 6, 10, 15. c. 5. f. 1. c. 6. f. 3. 4. c. 7. f. 5. c. 8. f. 1. c. 14. f. 2. c. 16. f. 6. c. 22. f. 6. 9. c. 24. f. 13. c. 25. f. 10, 11. c. 26. f. 1. 4. 5. 15, 20. c. 27. f. 1. 4. 5. 9, 12, 22. c. 28. f. 6. c. 29. f. 4. 6. c. 30. f. 2, 4, 20, 24, 31. c. 31. f. 22, 24, 29. c. 32. f. 9, 10, 11, 12, 13, 16, 17. c. 33. f. 2. c. 35. f. 21.	<i>Scholes</i>	c. 35. f. 10.
<i>Rotting</i>	c. 27. f. 1. c. 29. f. 2. 4. c. 32. f. 16.	<i>Scotland</i>	c. 22. f. 2, 14, 16. c. 31. f. 25.
<i>Royal Society</i>	vide <i>Society</i> .	<i>Scraping</i>	c. 27. f. 9.
<i>Rubbing</i>	c. 29. f. 4. 7.	<i>Screw</i>	c. 5. f. 2. c. 10. f. 2. c. 21. f. 16. c. 26. f. 6.
<i>Rulers</i>	c. 30. f. 33.	<i>Sculptor</i>	vide <i>Ingraver</i> . c. 20. f. 28.
<i>Rupture</i>	c. 3. f. 17. c. 10. f. 2.	<i>Scurvey</i>	c. 15. f. 2. c. 21. f. 16. c. 22. f. 15. c. 27. f. 6.
<i>Rust</i>	c. 26. f. 21.	<i>Sea</i>	c. 25. f. 2. vide <i>Ships</i> .
<i>Rye</i>	c. 1. f. 1.	<i>Season</i>	c. 5. f. 2. c. 8. f. 1. 4. c. 9. f. 3, 4. c. 11. f. 2. c. 15. f. 1. c. 17. f. 2, 4. c. 18. f. 5. c. 19. f. 1. c. 20. f. 13, 18, 21. c. 24. f. 6. c. 26. f. 3, 5, 14. c. 27. f. 5. c. 28. f. 4. c. 29. f. 2, 4, 6. c. 30. f. 25. c. 32. f. 7, 9, 16, 19.
8		<i>Seasoning</i>	c. 5. f. 2. c. 8. f. 4. c. 21. f. 7. c. 30. f. 25, 34. c. 31. f. 1, 2, 3, 4, 34.
<i>Sacks</i>	c. 31. f. 29, 31. vide	<i>Sebestins</i>	c. 26. f. 18.
<i>Coales.</i>		<i>Seconds</i>	c. 28. f. 3.
<i>Sacraments</i>	c. 35. f. 5.	<i>Seedes</i>	<i>Intr.</i> 7, 8. c. 1. f. 2, 3, 4. c. 3. f. 6, 8. c. 4. f. 2. c. 20. f. 24. c. 22. f. 5. c. 23. f. 3. c. 24. f. 11, 14. c. 25. f. 7, 9, 11. c. 26. f. 9, 10, 20, 26. c. 32. f. 1, 2, 3, 4. c. 34. f. 9, 10. c. 35. f. 20, 22.
<i>Sacrifices</i>	c. 35. f. 6, 15, 19.	<i>Seedling</i>	<i>Intr.</i> 8. c. 5. f. 1. c. 27. f. 1. c. 28. f. 4.
<i>Sadlers</i>	c. 12. f. 2. c. 20. f. 29.	<i>Seminary</i>	vide <i>Sowing</i> c. 1. f. 3. c. 2. f. 1. vide <i>Nursery</i> , <i>Sowing</i> .
<i>Saffron</i>	c. 9. f. 10.	<i>Seed.</i>	
<i>Salads</i>	c. 3. f. 17. c. 6. f. 4. c. 8. f. 4. c. 21. f. 16, 19. c. 23. f. 4.	<i>September</i>	c. 28. f. 4.
<i>Sallow</i>	c. 20. f. 3. c. 28. f. 1. c. 32. f. 19. c. 33. f. 3, 14. c. 34. f. 20.	<i>Sepulcher</i>	c. 35. f. 5, 13, 15. vide <i>Burying</i> .
<i>Salt</i>	c. 3. f. 17. c. 31. f. 3.	<i>Serpent</i>	c. 6. f. 4.
<i>Salves</i>	c. 26. f. 4.	<i>Servance</i>	c. 10. f. 1. c. 28. f. 6. c. 31. f. 3. c. 32. f. 19.
<i>Samera</i>	c. 4. f. 2.	<i>Seseli</i>	c. 25. f. 13.
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THE

THE  
**T A B L E**  
 TO  
*R A P I N U S*'s *N E M U S*,  
 AND THE  
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# THE T A B L E TO THE K A L E N D E R.

It might seem impertinent to have added a *Table* to a *Book* of so small a *Volume*, and which seems to be of it self but a *Table*: But since it may prove advantageous for the saving of time, at once to learn the whole *Culture* of any *Plant*, as the *Particulars* are sprinkled through the several *Pages*; the *Author* has thought fit to *Collect*, and annex it.

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SYLVA

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2000	...	...	...

AT THE

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# SYLVA: OR, A DISCOURSE

## OF Forest-Trees,

### AND The Propagation of Timber in His MAJESTIES Dominions, &c.

*Inque ades, inceptumque una decurre laborem,  
O decus, ô fama merito pars maxima nostra,  
CAROLIDE, pelagoque volans da vela petenti:  
Da facilem cursum, atque audacibus annue cœptis:  
Ignarosque vie mecum miseratus agrestes  
Ingredere, & votis jam nunc assuesce vocari.*

#### The Introduction.

I.  Ince there is nothing which seems more fatally Introduction.  
to threaten a *Weakning*, if not a *Dissolution* of  
the strength of this famous and flourishing Na-  
tion, than the sensible and notorious decay of  
her *Wooden walls*, when either through *time*,  
*negligence*, or other *accident*, the present *Navy*  
shall be worn out and impair'd; it has been a very worthy and  
seasonable Advertisement in the Honourable the principal *Officers*  
and *Commissioners*, what they have lately suggested to this *Illu-*  
*strious Society*, for the timely prevention and redress of this in-  
tolerable defect. For it has not been the late increase of *Shipping* a-  
lone, the multiplication of *Glass-works*, *Iron-Furnaces*, and the  
like, from whence this impolitick diminution of our *Timber* has  
proceeded; but from the disproportionate spreading of *Tillage*,  
caused through that prodigious havock made by such as lately pro-  
B fessing.

selling themselves against *Root* and *Branch* (either to be re-im-burs'd their *Poly* purchases, or for some other sordid respect) were tempted, not only to *fell* and *cut* down, but utterly to *extirpate*, *demolish*, and *raz*e, as it were, all those many goodly *Woods*, and *Forests*, which our more prudent *Ancestors* left standing, for the Ornament, and service of their *Country*. And this *devastation* is now become so *Epidemical*, that unless some favourable *expedient* offer it self, and a way be seriously, and speedily resolv'd upon, for a future store, one of the most glorious, and considerable *Bulwarks* of this *Nation*, will, within a short time, be totally wanting to it.

2. To attend now a *spontaneous* supply of these decay'd *Materials* (which is the vulgar, and natural way) would cost (besides the *Inclosure*) some entire *Ages* repose of the *Plow*! Therefore, the most expeditious, and obvious *Method*, would doubtless be, one of these *two* ways, *Sowing*, or *Planting*. But, first, it will be requisite to agree upon the *Species*; as what *Trees* are likely to be of greatest *Use*, and the fittest to be cultivated; and then, to consider of the *Manner* how it may best be effected. Truly, the *waste*, and *destruction* of our *Woods*, has been so universal, that I conceive nothing less than an *universal* *Plantation* of all the sorts of *Trees* will supply, and well encounter the defect; and therefore, I shall here adventure to speak something in general of them all; though I chiefly insist upon the propagation of *such* only as seem to be the most wanting, and serviceable to the end propos'd.

3. And first by *Trees* here, I consider principally for the *Genus* *generalissimum*, such *Lignous* and woody *Plants*, as are *hard* of substance, *procere* of stature; that are *thick* and *solid*, and stiffly adhere to the *Ground* on which they stand: These we shall divide into the *Greater* and more *Ceduous*, *Fruticant* and *Shrubby*; *Feras* and wild; or more *Civiliz'd* and domestique; and such as are *Sative* and *Hortensal* subalternate to the other; But of which I give only a touch, distributing the *rest* into these two *Classes*, the *Dry*, and the *Aquatic*; both of them applicable to the same civil uses of *Building*, *Ustensils*, *Ornament*, and *Fuel*; for to dip into their *Medicinal* virtues is none of my *Province*, though I sometimes glance at them with due *submission*, and in few *Instances*.

4. Among the *dry*, I esteem the more principal, and solid, to be the *Oak*, *Elme*, *Beech*, *Ash*, *Chest-nut*, *Wall-nut*, &c. The less principal, the *Service*, *Maple*, *Lime-tree*, *Horn-beam*, *Quick-beam*, *Birch*, *Hazel*, &c. together with all their *sub-alternate*, and several kinds.

— Which of how many sorts they are, We can't stand here at present to declare.

*Sed neque quam multæ species, nec nomina quæ sint, Est numerus, Geor. 2.*

5. Of the *Aquatical*, I reckon the *Poplars*, *Ash*, *Alder*, *Willow*, *Sallow*, *Osier*, &c. Then I shall add a word or two, for the encouragement of the planting of *Fruit-trees*, together with some less vulgar, but no less *useful* *Trees*, which, as yet are not *endeniz*on'd amongst us, or (at least) not much taken notice of: And in pursuance hereof, I shall observe this *order*: First, to shew how they are to be *Raised*, and then *Cultivated*; By *raising*, I understand the *Seed* and



Introd.

*A Discourse of Forest-Trees.*

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and the *Soil*; by *Culture* the *Planting, Fencing, Watering, Dressing, Pruning* and *Cutting*; of all which briefly.

6. And first for their *Raising*, some there are;

Spring of themselves unforc'd by human care,

Nullis hominum cogentibus, ipsa  
Sponte sua veniunt

Specifying according to the various disposition of the *Air* and *Soil*;

Some from their *Seeds* arise,

Pars autem posito surgunt de semine.

As the *Oak, Chess-nut, Ash, &c.*

Some to thick *Groves* from their own *Roots* do spring, Pullulat ab radice aliis densissima Sylva.

As the *Elme, Alder, &c.* and there are others

Grow without Root,

Nil radicis egent

as *Willows*, and all the *Vimineous* kinds, which are raised of *Stems* only.

These ways first Nature gave,

Hos natura modos primùm dedit

For thus we see there are more ways to the *Wood* than one; and she has furnish'd us with variety of expedients.

7. And here we might fall into a deep *Philosophical* Research; whether the *Earth* it self in some place thereof or other, even without *Seed, Branch* or *Root, &c.* would produce every kind of *Vegetable*; as it manifestly does divers sorts of *Grass* and *Plants*? (*viz.*) the *Tre-fole* or *Clover* in succulent land; In dry ground, *May* and *Rag-weeds*; In the very moist, *Ros-folis, Argentina, Flags, &c.* And the very barren; *Fern, Broom, and Heath, &c.* So *Virgil* notes sterile places for the *Pitch-tree*; we our wett and *Uliginous* for *Birch, Alder, &c.* The more lofty, poor and perflatile for *Tew, Guiniper, Box*, and the like; and we read in the *Natural Histories* of divers *Countries*, that the *Cedar, Palmetos, Queen-Pines, Ebony, Nutmeg, Cinnamon, &c.* for *Trees*; the *Tulip, Hyacinth, Crocus, &c.* for *Flowers*, are sometimes, and in some regions *Aborigines*, descended immediately from the *Genius* of the *Soils, Climate, Sun, Shade, Air, Winds, Water, Nitrous-Salts, Rocks, Banks, Shores*, and (as the *Negros-Heads* in the *Barbados*) even without *Seed*; or at least any perceptible rudiment. For with all this we are not satisfied without supposing some previous *seminal* disposition lurking, and dispers'd in every part of the *Earth*, in what *Molecule* or subtile *textures* we shall not enquire, but though haply not at first so perfect as the maturer *Seeds* of their after peculiar *Plants*; yet such as are fit for the *sun* and *Influences* to operate on, 'till they have prepar'd, discus'd, and excited their *seminal*, and *Prolifick* vertue to exert it self and awake out of sleep, in which they lie as in their *causes*, freeing themselves from those impediments which hindred their *specification* and *Nativity*: This Conception the learned *Gassendus* would illustrate by the latent fire in *Flints*, which never betrays it self 'till it be forced out by *Collision*; but which yet methinks, does not so fully inlighten this *Hypothesis*, which we only hint for Method

and Introduction only: For the design of this *Discourse* is not to persuade *Men* to sit still, and let *Nature* work alone, but to aid and assist *her* as much as they are able from *Seeds* and *Plants* already perfected, and qualified for more speedy *Propagation*. Most Ingenious, in the mean time, is what some upon an accurate and narrow guess, have not feared to pronounce; namely, that all planting by *seed*, was but a kind of *Inoculation*; and propagation by *Cyons* and *Sprouts*, but a *Subterranean Grafting*: And upon this account I am the more willing to assent, that in *Removing* of wild Trees, taken out of incumber'd places, (so it be perform'd with all due circumstances) there may happen considerable *Improvements*; since as there is something in *Super-grafting*, or the repetition of *Grafting*, for the enlargement, and melioration of *Fruit*; so there may be also in a careful *Removal*; especially the *Tree* being of a kind apt to dilate its *Roots*, and taken whilst those *Roots* may be safely, and intirely transferr'd; and likewise, because it is presum'd that most Trees propagated by *Seeds*, emit a principal *Root*, very deep into the Earth, which frequently extracting but a courser *Nutrimment* (though it may haply yield a close, and firmer *Timber*) is not yet so apt to Shoot and spread, as what are by *Removal* deprived of that *Root*, and by being more impregnate with the *Sun*, *Dews* and heavenly *Influences* near the surface, enabled to produce larger, more delicate and better tasted *Fruit*; supposing *Nuts*, *Mast*, or *Berries*, for we would not go out of our *Forest* for instances. And yet even in these descents of the *Top-Root*, it sometimes penetrating to a Vein of some rich *Marle* or other Mould, the extraordinary flourishing and expedition of growth, will soon give notice of it. But to make some *Trial* of this, 'twere no difficult matter, when one plants a *Nursery* or *Grove*, to experiment what the *Earth*, as far as the *Roots* are like to reach, will advance and discover to us.

8. In the mean time, it has been stily controverted by some, whether were better to raise *Trees* for *Timber*, and the like uses, from their *Seeds* and first *Rudiments*; or to *Transplant* such as we find have either rais'd themselves from their *Seeds*, or spring from the *Mother-roots*. Now that to produce them immediately of the *Seed* is the better way, these *Reasons* may seem to evince.

*First*, because they take soonest. *Secondly*, because they make the straightest, and most uniform shoot. *Thirdly*, because they will neither require *staking*, nor *watering* (which are two very considerable *Articles*) and *lastly*, for that all *transplanting* (though it much improve *Fruit-trees*) unless they are taken up the first Year, or two, is a considerable impediment to the growth of *Forest-trees*. And, though it be true, that divers of those which are found in *Woods*, especially *Oaklings*, young *Beeches*, *Ash*, and some others, spring from the self-sown *mast* and *keys*; yet, being for the most part dropp'd, and disseminated amongst the half rotten sticks, musty leaves, and perplexities of the *Mother-roots*, they grow scraggy; and being over-dripp'd become squalid and apt to gather mols,

Which checks their growth, and makes their bodies pine. *Crescentique adimunt satius, uruntque serentem. Geo. 2.*

Nor

Nor can their roots expand, and spread themselves as they would do if they were *sown*, or had been *planted* in a more open, free, and ingenuous *soil*. And that this is so, I do affirm upon *Experience*, that an *Acorn* sown by hand in a *Nursery*, or ground where it may be free from these encumbrances, shall in two, or three Years out-strip a *Plant* of twice that age, which has either been self-sown in the *Woods*, or removed; unless it fortune, by some favourable accident, to have been scattered into a more natural, penetrable, and better qualified place: But this disproportion is yet infinitely more remarkable in the *Pine*, and the *Wal-nut-tree*, where the *Nut* set into the ground does usually overtake a *Tree* of ten years growth which was planted at the same instant; and this is a *Secret* so generally mis-represented by most of those who have treated of these sort of *Trees*, that I could not suffer it to pass over without a particular *remark*; so as the noble *Poet* (with pardon for receding from so venerable *Authority*) might be mistaken, when he delivers this observation as *universal*, to the prejudice of *sowing*, and raising *Woods* from their Rudiments:

Trees which from scattered Seeds to sprig are made  
Come slowly on; for our Grand-childrens shade.

Nam quæ seminibus jactis se sustulit arbor  
Tardus venit; seris factura nepotibus umbram.

Geor. l. 2.

And indeed I know divers are of this opinion; and possibly in some luckier *soils*, and where extraordinary care is had in *Transplanting*, and removing cumbrances, &c. there may be reason for it; But I affirm it is *not*, and for the most part; and find I have the suffrage of another no inelegant *Poet*, if not in a full assent to my *Affertion*, yet in the choyce of my procedure for their perfection.

— Though *Suckers* which the *Stock* repair;  
Will with thick Branches crowd the empty Air,  
Or the *Ground-Oak* transplanted, boughs may shoot;  
Yet no such *Groves* do's with my fancy suit,  
As what from *Acorns* set on even rows  
In open fields at their due distance grows.  
What though your Ground long time must fallow lie;  
And *Seedling-Oaks* yield but a slow supply?  
No walks else can be for like beauty prais'd,  
For, certain 'tis, that *Plants* from *Acorns* rais'd,  
As to the Center deeper furs spread;  
So to the Zenith more advance their head:  
Be it that *Plants* for natural moysture pine,  
And as expos'd at Change of *Soil* decline;  
Or that the *Acorn* with its native mould  
Do's thrive, and spread, and firm alliance hold.

— Quamvis ipsa de stirpe parentis  
Euhulet, & tepus tollat se quæcas in auras,  
Aut mutata solo, ramis exulet apicis;  
Forma tamen nemoris non sit mihi gratior ulla,  
Quàm quod per campos, posito de semine, crevit.  
Et quamquam sit agro prælongum tempus inertis  
Ducendum, ac tarda surgent de semine quercus:  
His tamen, his longè veniunt felicius umbrae.  
Nam certum est de glande satas radicibus imis  
Altius in terram per se descendere plantas:  
Majoresque adto in cælum profundere ramos.  
Seu quod dediscant mutatam semina matrem,  
Degereremque serant alieno ex ubere prolem:  
Stve quod ipsa sibi cognata inolevere terra  
Glans primo melius paulatim affuerit ab ortu.

Rapinus Hort. l. 2.



## C H A P. I.

## Of the Soil, and of Seed.

Soil.

1. **H**ere, for *Methods* sake, something it were expedient to premise concerning the *Soil*; and indeed I do acknowledge to have observ'd so vast a *difference* in the Improvement of *Woods*, by that of the *Ground*; that it is at no hand to be neglected: But this being more than Transitorily touch'd in each *Chapter* of the ensuing *Discourse*, I shall not need to assign it any apart, when I have affirm'd in General, that most *Timber-Trees* grow and prosper well in any tolerable *Land* which will produce *Corn* or *Rye*, and which is not in excess *Stony*; in which nevertheless there are some *Trees* delight; or altogether *Clay*, which few, or none do naturally affect; And yet the *Oak* is seen to prosper in it, for its toughness preferr'd before any other by many *Workmen*, though of all *Soils* the *Cow-pasture* doth certainly exceed, be it for what purpose soever of planting *Wood*. Rather therefore we should take notice how many great *Wits* and *ingenious* Persons, who have leisure and faculty, are in pain for *Improvements* of their *Heaths* and barren *Hills*, cold and starving places, which causes them to be neglected and despair'd of; whilst they flatter their hopes and vain expectations with fructifying liquors, *Chymical Menstrues* and such vast conceptions; in the mean time that one may shew them as *Heathy* and *Hopeless* grounds, and barren *Hills* as any in *England*, that do now bear, or lately have born *Woods*, *Groves*, and *Copses* which yield the *Owners* more *wealth*, than the richest and most opulent *Wheat-lands*: And if it be objected that 'tis so long a day before these *Plantations* can afford that gain; The *Brabant Nurseries*, and divers home-plantations of *Industrious Persons* are sufficient to convince the gain-sayer. And when by this *Husbandry* a few *Acorns* shall have peopl'd the *Neighboring Regions* with young *Stocks* and *Trees*; the residue will become *Groves* and *Copses* of infinite delight and satisfaction to the *Planters*. Besides, we daily see what *Course Lands* will bear these *Stocks* (suppose them *Oaks*, *Wall-nutts*, *Chest-nutts*, *Pines*, *Fir*, *Ash*, *Wild-Pears*, *Crabs*, &c.) and some of them (as for instance the *Pear* and the *Fir* or *Pine*) strike their *Roots* through the roughest and most impenetrable *Rocks* and clefts of *Stone* it self; and others require not any *rich* or *pinguid*, but very moderate *Soil*; especially, if committed to it in *Seeds*, which allies them to their *Mother* and *Nurse* without renitency or regret: And then considering what assistances a little *Care* in easing and stirring of the ground about them for a few years does afford them: What cannot a strong *Plow*, a *Winter* mellowing, and *Summer* heats, incorporated with the pregnant *Turfe*, or a slight assistance of *Lime*, *Loam*, *Sand*, rotten *compost*, discreetly mixed (as the case may require) perform



perform even in the most unnatural and obstinate *Soil*? And in such places where anciently *Woods* have grown, but are now unkind to them, the fault is to be reformed by this Care; and chiefly, by a sedulous *extirpation* of the old remainders of *Roots*, and latent *Stumps*, which by their *mustiness*, and other pernicious qualities, sowre the ground, and poyson the *Conception*; And herewith let me put in this note, that even the *Soil* it self does frequently discover and point best to the particular *Species*, though some are for all places alike: but I shall say no more of these *particulars* at this time, because, the rest is sprinkl'd over this whole *Work* in their due places; Wherefore we hasten to the following *Title*, namely, the choice and ordering of the *Seeds*.

2. Chuse your *Seed* of that which is perfectly *mature*, *ponderous* *Seed*, and *sound*; commonly that which is easily shaken from the *boughs*, or gathered about *November*, immediately upon its spontaneous fall, or taken from the tops and summities of the fairest, and soundest *Trees*, is best, and does (for the most part) direct to the proper season of *interring*, &c. According to *Institution*. For,

Nature her self who all created first,  
Invented sowing, and the wild Plants nurs't:  
When Mast and Berries from the Trees did drop,  
Succeeded under by a numerous Crop.

Nam specimen sativis, & insitionis origo  
Ipsa facit rerum primum natura creatrix:  
Arboribus quoniam bacce, glandesque caduce  
Tempestiva dabant pullorum examina subter, &c.

Lucret. l. 5.

Yet this is to be consider'd, that if the *place* you sow in be too cold for an *Autumnal* semination, your *Acorns*, *Mast*, and other *Seeds* may be prepared for the *Vernal* by being barrel'd, or potted up in moist *Sand*, or *Earth stratum s.f.* during the *Winter*; at the expiration whereof you will find them *sprouted*; and being committed to the *Earth*, with a tender hand, as apt to *take* as if they had been sown with the most early, nay with great advantage: by this means, too, they have escaped the *Vermine* (which are prodigious devourers of *Winter* sowing) and will not be much concern'd with the increasing heat of the *Season*, as such as being crude, and *unfermented* are newly sown in the beginning of the *Spring*; especially, in hot and loose *Grounds*; being already in so far a progress by this artificial preparation; and which (if the provision to be made be very great) may be thus manag'd. Chuse a fit piece of *Ground*, and with boards (if it have not that *position* of it self) design it three foot high; lay the first foot in fine *Earth*, another of *Seeds*, *Acorns*, *Mast*, *Keys*, *Nuts*, *Haws*, *Holly-berries*, &c. Promiscuously, or separate, with (now, and then) a little *Mould* sprinkled amongst them: The third foot wholly *Earth*: Of these preparatory *Magazines* make as many, and as much larger ones as will serve your turn, continuing it from time to time as your *store* is brought in. The same for ruder handlings may you also do by burying your *Seeds* in dry *Sand*, or pulveriz'd *Earth*, *Barrelling* them (as I said) in *Tubs*, or laid in heaps in some deep *Cellar* where the rigour of the *Winter* may least prejudice them; and I have fill'd old *Hampers*, *Bee-hives*, and *Boxes* with them, and found the like advantage, which is to have them ready for your *Seminary*, as before hath been shew'd, and exceedingly prevent the season. There be also  
who

who affirm, that the careful cracking and opening of *Stones* which include the *Kernels*, as soon as ripe, precipitate *Growth* and gain a *years* advance; but this is erroneous. Now if you gather them in moist weather, lay them a drying, and so keep them till you *sow*, which may be as soon as you please after *Christmas*. If they spire out before you sow them, be sure to commit them to the earth before the *sprout* grows dry, or else expect little from them.

3. But to pursue this to some farther Advantage; as to what concerns the election of your *Seed*, It is to be consider'd, that there is vast difference, (what if I should affirm more than an *hundred years*) in *Trees* even of the same *growth* and *Bed*, which I judge to proceed from the variety and quality of the *Seed*: This, for instance, is evidently seen in the *heart, procerity* and *stature* of *Timber*; and therefore chuse not your *Seeds* always from the most *Fruitful-trees*, which are commonly the most *Aged*, and decayed; but from such as are found most *solid* and *fair*: Nor, for this reason, covet the largest *Acorns, &c.* but (as *Husbandmen* do their *Wheat*) the most *weighty, clean* and *bright*: This Observation we deduce from *Fruit-trees*, which we seldom find to bear so kindly, and plentifully, from a *sound stock, smooth Rind, and firm Wood*, as from a *rough, lax, and untoward Tree*, which is rather prone to spend it self in *Fruit*, (the ultimate effort, and final endeavour of its most delicate *Sap*.) than in *solid* and *close substance* to encrease the *Timber*. And this shall suffice, though some haply might here recommend to us a more accurate *Microscopical* examen, to interpret their most secret *Schematisms*, which were an over nicety for these great *Plantations*.

4. As concerning the *medicating, and insuccation* of *Seeds*, or enforcing the *Earth* by rich and generous *Composts, &c.* for *Trees* of these kinds, I am no great favourer of it; not only, because the *charge* would much discourage the *Work*; but for that we find it unnecessary, and for most of our *Forest-trees*, noxious; since even where the ground is too fertile, they thrive not so well; and if a *Mould* be not proper for one sort, it may be fit for another: Yet I would not (by this) hinder any from the trial, what advance such *Experiments* will produce: In the mean time, for the simple *Imbibition* of some *Seeds and Kernels*, when they prove extraordinary dry, as the Season may fall out, it might not be amiss to *macerate* them in *Milk, or Water* only, a little *impregnated* with *Cow-dung, &c.* during the space of twenty four hours, to give them a *spirit* to sprout, and *cheer* the sooner; especially, if you have been retarded in your *sowing* without our former preparation: But concerning the *mould, soiling, and preparations* of the *ground*, I refer you to my late *Treatise of Earth*, if what you meet with in *this* do not abundantly encounter all those difficulties.

5. Being thus provided with *Seeds* of all kinds, I would advise to raise *Woods* by sowing them *apart*, in several places destin'd for their growth, where the *Mould* being prepar'd (as I shall shew hereafter) and so qualified (if election be made) as best to suit with the nature of the *Species*, they may be sown *promisuously*, which

is the most natural and *Rural*; or in streight, and even *lines*, for *Hedge-rows*, *Avenues*, and *Walks*, which is the more *Ornamental*: But, because some may chuse rather to draw them out of *Nurseries*; that the *Culture* is not much different, nor the hinderance considerable (provided they be early, and carefully Removed) I will finish what I have to say concerning these *Trees* in the *Seminary*, and shew how they are *there* to be *Raised*, *Transplanted*, and *Govern'd* till they can shift for themselves.

## C H A P. II.

## Of the Seminary.

1. *O* *Vi Vineam, vel Arbustum constitthere volet, Seminaria* Seminary prius facere debbit, was the precept of *Columella*, l. 3. c. 5. speaking of *Vineyards* and *Fruit-trees*: and, doubtless, we cannot pursue a better Course for the Propagation of *Timber-trees*: For though it seem but a trivial design that one should make a *Nursery* of *Foresters*; yet it is not to be imagin'd, without the experience of it, what prodigious *Numbers* a very small *spot* of ground well Cultivated, and destin'd for this purpose, would be able to furnish towards the sending forth of yearly *Colonies* into all the naked quarters of a *Lordship*, or *Demeasnes*; Being with a pleasant *Industry* liberally distributed amongst the *Tenants*, and dispos'd of about the *Hedge-rows*, and other *Waste*, and uncultivated places, for *Timber*, *Shelter*, *Fuel*, and *Ornament*, to an incredible Advantage. This being a cheap, and laudable Work, of so much pleasure in the execution, and so certain a *profit* in the event; to be but once well done (for, as I affirm'd, a very small *Nursery* will in a few years people a vast extent of Ground) hath made me sometimes in admiration at the universal negligence.

2. Having therefore made choice of such *Seeds* as you would sow, by taking, and gathering them in their just *season*; that is, when *dropping ripe*; and (as has been said) from fair *thriving* *Trees*; and found out some fit place of *Ground*, well *Fenced*, respecting the *South East*, rather than the full *South*, and well protected from the *North* and *West*;

He that for wood his Field would sow,  
Must clear it of the *Shrubbs* that grow;  
Cut *Brambles* up, and the *Ferne* mow.

*Qui serere ingenium volet agrum;  
Liberat prius arva fruticibus;  
Falce rubos, filicemque rescat.*

*Boeth. l. 2. Met.*

This done, let it be *Broken up* the *Winter* before you *sow*, to mellow it; especially if it be a *Clay*, and then the *furrow* would be made deeper; or so, at least; as you would prepare it for *Wheat*: Or you may *Trench* it with the *spade*, by which means it will the easier be cleansed of whatsoever may obstruct the putting forth, and insinuating of the tender *Roots*: Then, having given it a second

C

*stirring;*



*stirring*, immediately before you *sow*, cast, and dispose it into *Rills*, or small narrow *Trenches* of four, or five inches deep, and in even lines, at two foot interval, for the more commodious *Run-cation*, *Hawing*, and dressing the Trees: Into these *Furrows* (for a *Conseminea Sylva*) throw your *Oak*, *Beech*, *Ash*, *Nuts*, all the *Glandiferous* Seeds, *Mast*, and *Key-bearing* kinds, so as they lie not too thick, and then cover them very well with a *Rake*, or fine-tooth'd *Harrow*, as they do for *Pease*: Or, to be more accurate, you may set them as they do *Beans* (especially, the *Nuts* and *Acorns*) and that every *Species* by themselves, for the *Roboraria*, *Glandaria*, *Ulmaria*, &c. which is the better way: This is to be done at the latter end of *October*, for the *Autumnal* sowing; and in the lighter ground about *February* for the *Vernal*.

Then see your hopeful *Grove* with *Acorns* sown,  
But e're your *Seed* into the Field be thrown,  
With crooked *Plough* first let the lusty *Swain*  
Break-up, and stubborn *Clodds* with *Harrow* plain.  
Then, when the *Stem* appears, to make it bare  
And lighten the hard *Earth* with *Hough*, prepare.  
Hough in the *Spring*: nor frequent *Culture* fail,  
Lest noxious *Weeds* o're the young *Wood* prevail:  
To barren ground with toyle large meannor add,  
Good-husbandry will force a Ground that's bad.

*Pipinde nēmus sparsa cures de glande parandum:*  
*Sed tamen ante tuo mandes quam semina campo;*  
*Ipsē tibi duro robustus vomere fossor*  
*Omne solum subigat late, explanetque subactum.*  
*Cumque novus fissa primum de germine ramus*  
*Findit humum, rursus ferro versanda bicorni*  
*Constita vere novo tellus, cultuque frequenti*  
*Excrescenda, herba circum ne forte nocentes*  
*Proveniant, gemenque ipsum radicibus urant.*  
*Nec cultu campum cunctantem argere frequentia,*  
*Et saturare sumo pudeat, si forte resistat*  
*Culcitra: nam tristis humus superanda colendo est.*

Rapinus l. 2.

Note that 6 *Bushels* of *Acorns* will sow or plant an *Acre*, at one foot distance.

3. Your *Plants* beginning now to peep, should be *earthed* up, and comforted a little; especially, after breaking of the greater *Frosts*, and when the swelling mould is apt to spue them forth; but when they are about an *inch* above ground, you may in a *moist* season, draw them up where they are too *thick*, and set them immediately in other *lines*, or *Beds* prepar'd for them; or you may plant them in double *fosses*, where they may abide for good and all, and to remain till they are of a competent stature to be *Transplanted*; where they should be set at such *distances* as their several *kinds* require; but if you draw them only for the thinning of your *Seminary*, prick them into some empty *Beds* (or a *Plantarium* purposely design'd) at one foot *interval*, leaving the rest at two or three.

4. When your *Seedlings* have stood thus till *June*, bestow a slight digging upon them, and scatter a little *mungy*, half-rotten *Littier*, *Fearn*, *Bean-hame*, or old *Leaves* among them, to preserve the *Roots* from scorching, and to entertain the moisture; and then in *March* following (by which time it will be quite consum'd and very mellow) you shall *chop* it all into the *earth*, and smingle it together: Continue this *process* for two or three years successively; For till then, the substance of the *Kernel* will hardly be spent in the plant, which is of main import; but then (and that the stature of your young *Imper* invite) you may plant them forth, carefully taking up their *Roots*, and cutting the *stem* within an *inch* of the ground (if the *kind*, of which hereafter, suffer the *knife*) set them where they are to continue: If thus you reduce them to the



the distance of forty foot; the Intervals may be planted with *Asp.* which may be sell'd either for *Poles*, or *Timber* without the least prejudice of the *Oak*: Some repeat the cutting we spake of the second Year; and after March (the *Moons* decreasing) re-cut them at half a foot from the surface; and then meddle with them no more: but this (if the process be not more severe than needs) must be done with a very sharp Instrument; and with care, lest you violate, and unsettle the *Roots*, which is likewise to be practis'd upon all those which you did not *Transplant*; unless you find them very thriving *Trees*; and then it shall suffice to *prune* off the *Branches*, and spare the *Tops*; for this does not only greatly establish your *Plants* by diverting the *Sap* to the *Roots*; but likewise frees them from the injury and concussions of the *Winds*, and makes them to produce handsom, straight *Shoots*, infinitely preferable to such as are abandon'd to *Nature*, and *Accidents*, without this discipline: By this means the *Oak* will become excellent *Timber*, shooting into straight, and single *Stems*. The *Chestnut*, *Asp.*, &c. multiply into *Poles*, which you may reduce to *standards* at pleasure: To this I add, that as oft as you make your annual *Transplanting*, out of the *Nursery*, by drawing forth the choicest *Stocks*, the remainder will be improved by a due stirring and turning of the *mould* about their *Roots*.

5. *Theophrastus* in his third Book *de Causis* c. 7. gives us great caution in planting to preserve the *Roots*, and especially the *Earth*, adhering to the smallest *Fibers*, which should by no means be shaken off, as most of our *Gardeners* do to trim and quicken them as they pretend, which is to cut them shorter, &c. not at all considering, that those tender *Hairs* are the very *mouths*, and *Vehicles* which suck in the nutriment, and transfuse it into all the parts of the *Trees*, and that these once perishing, the thicker and larger *Roots*, hard, and less spongie, signifie little but to establish the *Stem*; as I have frequently experimented in *Orange-Trees*, whose *Fibers* are so very obnoxious to rot, if they take in the least excess of wet: And therefore *Cato* advises us to take care that we bind the *mould* about them, or transfer the *Roots* in *Baskets*, to preserve it from forsaking them; For this *Earth* being already applied, and fitted to the *overtures* and *mouths* of the *Fibers*, it will require some time to bring them in appetite again to a new *mould*, by which to repair their loss, furnish their *stock*, and proceed in their wonted *Oeconomy* without manifest danger and interruption: Nor less ought our care to be in the making, and dressing of the *pits* and *fosses* into which we design our *Transplantation*, which should be prepar'd and left some time open to macerating *Rains*, *Frosts*, and *Sun*, that may resolve the compacted *Salt*, render the *Earth* friable, mix and qualifie it for aliment, and to be more easily drawn in and digested by the *Roots* and analogous *Stomach* of the *Trees*: This, to some degree may be artificially done, by burning of *straw* in the newly opened *Pits*, and drenching the *mould* with *Water*; especially in over dry seasons, and by meliorating barren-ground with sweet, and comminuted *Setations*.

6. The Author of the Natural History, *Pliny*, tells us it was a vulgar Tradition, in his time, that no Tree should be Removed under two years old, or above three. *Cato* would have none Transplanted less than five fingers in diameter; But I have shew'd why we are not to attend so long for such as we raise of Seedlings. In the interim, if these directions appear too busie, or *properose*, or that the Plantation you intend be very ample, a more compendious Method will be the confused sowing of Acorns, &c. in Furrows, two foot asunder, covered at three fingers depth, and so for three years cleared, and the first Winter cover'd with seam, without any farther culture, unless you Transplant them; but, as I shew'd before, in Nurseries, they would be cut an inch from the Ground, and then let stand till March the second year, when it shall be sufficient to disbranch them to one only shoot, whether you suffer them to stand; or remove them elsewhere. But to make an Essay what Seed is most agreeable to the Soil, you may by the thriving of a promiscuous Semination make a judgment of,

What each Soil bears, and what it does refuse.

*Quid quaque seriat regio, & quid quaque recusat.*

Transplanting those which you find least agreeing with the place; or else, by Coppicing the *starvelings* in the places where they are newly sown, cause them sometimes to overtake even their untouch'd contemporaries.

7. But here some may inquire what distances I would generally assign to Transplanted Trees? To this somewhat is said in the ensuing Periods, and as occasion offers; though the promiscuous rising of them in Forest-Work, wild, and natural is to us I acknowledge more pleasing, than all the studied accuracy in ranging of them; unless it be, where they conduct, and lead us to Avenues, and are planted for Vistas (as the *Italians* term is) in which case, the proportion of the Breadth, and Length of the Walks, &c. should govern, as well as the Nature of the Tree, with this only note; That such Trees as are rather apt to spread, than mount (as the Oak, Beech, Wall-nut, &c.) be dispos'd at wider intervals, than the other, and such as grow best in Consort, as the Elm, Ash, Lime-tree, Sycamore, Firr, Pine, &c. Regard is likewise to be had to the quality of the Soil, for this work: V. G. If Trees that affect cold and moist grounds, be planted in hot and dry places, then set them at closer Order; but Trees which love scorching and dry Grounds at farther distance: The like rule may also guide in situations expos'd to impetuous Winds and other accidents, which may serve for general Rules in this piece of Tactics.

8. To leave nothing omitted which may contribute to the stability of our Transplanted Trees, something is to be premis'd concerning their staking, and securing from external injuries, especially from Winds and Cattel, against both which, such as are planted in Coppes, and for ample Woods, are sufficiently defended by the Acorns, and their closer order; especially, if they rise of Seed: But where they are expos'd in single rows, as in Walks, and Avenues, the

the most effectual course is to *empale* them with three good quarter *stakes*, of competent length set in *triangle* and made fast to one another by *mort* pieces above and beneath; in which a few *Brambles* being stuck, secure it abundantly without that choking or fretting, to which *Trees* are obnoxious that are only single *staked* and *Bushed* as the vulgar manner is; Nor is the *charge* of this so considerable, as the great *advantage*, accounting for the frequent reparations which the other will require. Where *Cattel* do not come, I find a good piece of *Rope*, tyed fast about the neck of *Trees* upon a *wisp* of *straw* to preserve it from galing, and the other end tightly streind to a *hook* or *peg* in the ground (as the *shrouds* in *Ships* are fastned to the *Masts*) sufficiently stabilishes my *Trees* against the *Western* blasts without more trouble; for the *Winds* of other *quarters* seldom infect us. But these *Cords* had need be well *pitched* to preserve them from wet, and so they will last many *Years*. I cannot in the mean time conceal what a noble Person has assur'd me, that in his goodly *plantation* of *Trees* in *Scotland*, where they are continually expos'd to much greater, and more impetuous *Winds*, than we are usually acquainted with; he never *stakes* any of his *Trees*; but upon all disasters of this kind, causes only his *Servants* to *redress*, and set them up again as often as they happen to be overthrown; which he has affirm'd to me, thrives better with them, than with those which he has *staked*; and that at last they strike root so fast, as nothing but the *Axe* is able to prostrate them; and there is good reason for it in my opinion, whilst these concussions of the *Roots*, loosning the *mould*, not only make room for their more easie insinuations, but likewise opens, and prepares it to receive, and impart the better nourishment. It is in another place I suggest that Transplanted *Pines* and *Firrs*, for want of their penetrating *Tap roots*, are hardly consistent against these *Gusts* after they are grown high; especially, where they are set close, and in *Tufts*, which betrays them to the greater disadvantage; And therefore such *Trees* do best in *Walks*, and at competent *distances* where they escape tolerably well: Such therefore as we design for *Woods* of them, should be sow'd, and never remov'd. In the mean time, many *Trees* are also propagated by *Cuttings*, and *Layers*; the *Ever-greens* about *Bartholomewtide*; other *Trees* within two, or three months after, when they will have all the *sap* to assist them; every body knows the way to do it is by flitting the *branch* a little way, when it is a little cut directly in, and then to plunge it half a foot under good mould, and leaving as much of its extremity above it, and if it comply not well, to peg it down with an *hook* or two, and so when you find it competently *rooted*, to cut it off beneath, and plant it forth: Other expedients there are by *twisting* the part, or *baring* it of the *Rind*; and if it be out of reach of the ground, to fasten a *tub* or *basket* of *Earth* near the *branch*, fill'd with a succulent mould, and kept as fresh as may be. For *Cuttings*, about the same *season*, take such as are about the bigness of your *Thumb*, setting



setting them a *foot* in the *Earth*, and near as much out. If it be of soft wood, as *Willows*, *Poplar*, *Alders*, &c. you may take much larger *Trunchions*, and so tall as *Cattel* may not reach them; if *harder*, those which are young, small and more tender; and if such as produce a *knur*, or *burry* swelling, set that part into the ground, and be sure to make the *hole* so wide, and point the end of your *Cutting* so smooth, as that in setting, it violate, and strip none of the *bark*; the other extrem may be slanted, and so treading the *Earth* close, and keeping it *moist*, you will seldom fail of success: By the *Roots*, also of a thriving, lusty and sappy Tree, more may be propagated; to effect which, early in *Spring*, dig about its *foot*, and finding such as you may with a little cutting bend upwards, raise them above ground three or four Inches, and they will in a short time make *Shoots*, and be fit for *transplantation*; or in this work you may quite separate them from the mother *Root* and cut them off: By *baring* likewise the bigger *Roots* discreetly, and hacking them a little, and then covering with fresh mould, *Suckers* may be raised in abundance, which drawing competent *Roots*, will soon furnish store of plants, and this is practicable in *Elms* especially, and all such *Trees*, as are apt of themselves to put forth *Suckers*; but of this more upon occasion hereafter. I now proceed to particulars.

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## CHAP.

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## C H A P. III.

## Of the Oak.

1. **R**Obur, the Oak, I have sometimes consider'd it very seriously, <sup>Oak.</sup> what should move *Pliny* to make a whole Chapter of one only *Line*, which is less than the Argument alone of most of the rest in his huge *Volume*: but the weightiness of the Matter does worthily excuse him, who is not wont to spare his Words, or his Reader. *Glandiferi maxime generis omnes, quibus hamus apud Romanos perpetuus.* "Mast-bearing-trees were principally those which the Romans held in chiefest repute, lib. 6. cap. 3. And in the following where he treats of Chaplets, and the dignity of the *Civic Coronet*, it might be compos'd of the Leaves or Branches of any Oak, provided it were a bearing Tree; and had Acorns upon it. It is for the esteem which these wise, and glorious people had of this Tree above all others, that I will first begin with the Oak; and indeed it carries it from all other Timber whatsoever, for the building of *ships*, being tough, bending well, strong and not too heavy, nor easily admitting water.

2. 'Tis pity that the several kinds of Oak are so rarely known amongst us, that wherever they meet with *Quercus*, they take it promiscuously for our Common Oak, whereas there be many Species of that goodly Tree, though we shall take notice of Four only, Two of which are most frequent with us; (for we shall say little of the *Cerris* or *Agilops*, goodly to look on, but for little else: some have mistaken it for Beech, whereas indeed it is a kind of Oak bearing a small round Acorn almost covered with the Cup, which is very rugged, the Branches loaded with a long Moss hanging down like dechevell'd hair, which much annoys it. There is likewise the *Esculus*, which though *Vitruvius*, *Plinie*, *Delcampius* and others take for a smaller kind, *Virgil* celebrates for its spreading, and profound root, and this *Delcampius* will therefore have to be the *Platylphus* of *Theophrastus*, and as our *Botanics* think, his *Phegos*, as producing the most edible fruit. But to confine our selves;) The *Quercus urbana*, which grows more up-right, and being clean, and lighter is fittest for Timber: And the *Robur* or *Quercus Sylvestris*, (taking *Robur* for the general name, at least, as contradistinct from the rest) which is of an hard, black grain, bearing a smaller Acorn, and affecting to spread in branches, and to put forth his Roots more above ground; and therefore in the planting, to be allow'd a greater distance; viz. from twenty five, to forty foot; (nay sometimes as many yards) whereas the other shooting up more erect will be contented with fifteen: This kind is farther to be distinguish'd by his fullness of leaves, which tarnish, and becoming yellow at the fall, do commonly clothe it all the Winter, the Roots growing very deep and stragling. The Author of *Britannia Ba-*  
conica

*conica* speaks of an *Oak*, in *Lanhadron Park* in *Cornwall*, which bears constantly leaves speckl'd with White; and of another call'd the *Painted Oak*; others have since been found at *Frid-wood* near *Sittingbourn* in *Kent*, as also *Sycamore*, and *Elms* in other places mentioned by the learned *Dr. Plot* in his *Nat. Hist. of Oxfordshire*, which I only mention here, that the variety may be compar'd by some ingenious person thereabouts, as well as the truth of the fatal *præ-admonition* of *Oaks* bearing strange leaves. There is likewise a kind of *Hemeris* or *Dwarf Oak* frequent in *New-England*, which (bearing *Acorns*) might easily be propagated here, if it were worth the while.

3. I shall not need to repeat what has already been said *cap. 2.* concerning the raising of this Tree from the *Acorn*; they will also indure the *laying*, but never to advantage of bulk or stature: It is in the mean time the propagation of this large spreading *Oak*, which is especially recommended for the excellency of the *Timber*; and that his *Majesties* Forests were well, and plentifully stor'd with them; because they require *room*, and space to amplify and expand themselves, and would therefore be planted at more remote distances, and free from all encumbrances: And this upon consideration how slowly a full-grown *Oak* mounts upwards, and how speedily they spread, and dilate themselves to all quarters, by dressing and due culture; so as above *forty years* advance is to be gain'd by this only Industry: And, if thus his *Majesties* Forests, and *Chases* were stor'd, *viz.* with this spreading Tree at handsom *Intervals*, by which *Grazing* might be improv'd for the feeding of *Deer* and *Cattel* under them, (for such was the old *Salus*) benignly visited with the gleams of the *Sun*, and adorn'd with the distant *Landships* appearing through the glades, and frequent *Vallies*;

(—) betwixt  
Whose rows the azure *Skie* is seen immix'd,  
With *Hillocks*, *Vales*, and *Fields*, as now we see  
Distinguish'd in a sweet variety;  
Such places which wild *Apple-trees* throughout  
Adorn, and happy *Shrubs* grow all about.)

(*Cœula distinguens inter plagâ currere possit  
Per tumulas, & convallas, camposque profusa:  
Ut nunc esse vides vario distincta lepore  
Omnia, quæ pomis interfusa dulcibus ornant  
Arbustisque tenent felicitibus obstita circum.*)

Lucret. l. 3.

As the *Poet* describes his *Olive-groves*, nothing could be more ravishing; for so we might also sprinkle *Fruit-trees* amongst them (of which hereafter) for *Cider*, and many singular uses, and should find such goodly *Plantations* the boast of our *Rangers*, and *Forests* infinitely preferable to any thing we have yet beheld, *rude*, and *neglected* as they are: I say, when his *Majesty* shall proceed (as he hath design'd) to animate this laudable pride into fashion, *Forests* and *Woods* (as well as *Fields* and *Inclosures*) will present us with another face than now they do. And here I cannot but applaud the worthy Industry of old *Sir Harbottle Grimstone*, who (I am told) from a very small *Nursery* of *Acorns*, which he sow'd in the neglected corners of his ground, did draw forth such numbers of *Oaks* of competent growth; as being planted about his *Fields* in even, and uniform rows, about one hundred foot from the *Hedges*; bush'd, and well water'd till they had sufficiently fix'd themselves,

did

did wonderfully improve both the beauty, and the value of his *Demeasnes*. But I proceed.

4. Both these *kinds* would be taken up very young, and *Transplanted* about *October*; some yet for these hardy, and late springing *Trees*, defer it till the *Winter* be well over; but the Earth had need be moist; and though they will grow tolerably in moist grounds; yet do they generally affect the *sound, black, deep and fast* mould, rather warm than over wet and cold, and a little *rising*; for this produces the firmest *Timber*; though my *L. Bacon* prefer that which grows in the *moister* grounds for *Ship-timber*, as the most *tough*, and less subject to *rust*: but let us hear *Pliny*. This is a general Rule, *saith he*; "What Trees soever they be which grow tolerably "either on *Hills*, or *Vallies*, arise to greater stature, and spread more "amply in the *lower ground*: But the *Timber* is far better, and of a "finer *grain*, which grows upon the *Mountains*; excepting only "Apple, and *Pear-trees*. And in the 39 *cap. lib. 16*. The *Timber* of "those Trees which grow in *moist*, and *shady* places, is not so "good as that which comes from a more *expos'd* situation, nor is it so "close, substantial and durable; upon which he much prefers the *Timber* growing in *Tuscany*, before that towards the *Venetian* side, and upper part of the *Gulph*: And that *Timber* so growing, was in greatest esteem long before *Pliny*, we have the *spear* of *Agamemnon* — *ἔχον ἀντιστοιχείας ἑσχατοῦ*. *Id. A.* from a Tree so *expos'd*; and *Didymus* gives the reason. *Τὰ γὰρ ἐν ἀνέμῳ* (says he) *ἄλλοις γυμναζέμεθα* *ἁλόν, σέλα, &c.* For that being continually weather-beaten they become harder and tougher: Otherwise, that which is *wind-shaken*, never comes to good; and therefore, when we speak of the *Climate*, 'tis to be understood of *Vallies* rather than *Hills*, and in *calm* places, than *exposed*, because they shoot streight and upright. The result of all is, that upon occasion of special *Timber*, there is a very great, and considerable difference; so as some *Oaken-Timber* proves manifestly weaker, more spongy, and sooner decaying than other: The like may be affirm'd of *Ash*, and other kinds; and generally speaking, the *close grain'd* is the stoutest, and most permanent: But of this, let the industrious consult that whole *tenth Chapter* in the *second Book* of *Vitruvius*, where he expressly treats of this Argument, *De Abiete supernate & infernate, cum Apennini descriptione*: Where we note concerning *Oak*, that it neither prospers in very *hot*, nor excessive *cold* Countries; and therefore there is little good of it to be found in *Africa*, or indeed, the lower, and most Southern parts of *Italy* (but the *Venetians* have excellent *Timber*) nor in *Denmark*, or *Norway* comparable to ours; it chiefly affecting a temperate *Climate*, and where they grow naturally in abundance, 'tis a promising mark of it. If I were to make choice of the *place*, or the *Tree*, it should be such as grows in the best *Cow-pasture*, or up-land *Meadow*, where the mould is rich, and sweet (*Suffolk* affords an admirable instance) and in such *places* you may also *Transplant* large *Trees* with extraordinary success; And therefore it were not amiss to bore, and search the ground where you intend to plant or sow, before you fall to work;

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since



since Earth too *shallow*, or *rockie* is not so proper for this *Timber*; the *Roots* fix not kindly, and though for a time they may seem to flourish, yet they will dwindle.

5. But to discourage none, *Oaks* prosper exceedingly even in gravel, and moist *Clays*, which most other *Trees* abhor; yea, even the coldest *Clay* grounds that will hardly graze: But these *Trees* will frequently make *Stands*, as they encounter variety of footing; and sometimes proceed again vigorously, as they either penetrate beyond, or out-grow their obstructions, and meet better Earth; which is of that consequence, that I dare boldly affirm, more than an hundred years advance is clearly gain'd by *Sail* and *Husbandry*. I have yet read, that there grow *Oaks* (some of which have contain'd ten loads apiece) out of the very Walls of *Silchester* in *Hantshire*, which seem to strike root in the very *Stones*; and even in our renowned *Forest* of *Dean* it self, some goodly *Oaks* have been noted to grow upon Ground, which has been as it were a *Rock* of antient *Cinders*, buried there many ages since. It is indeed observ'd, that *Oaks* which grow in rough *stony* grounds, and obstinate *clays*, are long before they come to any considerable stature; (for such places, and all sort of *Clay*, is held but a *step-mother* to *Trees*) but in time they afford the most excellent *Timber*, having stood long, and got good footing: The same may we affirm of the lightest *sands*, which produces a smoother-grain'd *Timber*, of all other the most useful for the *Joyner*; but that which grows in *Gravel* is subject to be *Fraw* (as they term it) and brittle. What improvement the stirring of the ground about the roots of *Oaks* is to the *Trees*, I have already hinted; and yet in *Copsey* where they stand warm, and so thickn'd with the *under-wood*, as this culture cannot be practis'd, they prove in time to be goodly *Trees*. I have of late tried the *Graffing* of *Oaks*, but as yet with slender success; *Ruellius* indeed affirms it will take the *Pear* and other *Fruit*, and if we may credit the *Past*,

The sturdy Oak do's Golden Apples bear.

And under *Elmes* swine do the Mast devour.

— Aurea dura  
Mala ferant quercus.

Ecl. 8.

Glandemque sues fragere sub Ulmo.

Geor.

Which I conceive to be the more probable, for that the *Sap* of the *Oak* is of an unkind tincture to most *Trees*. But for this Improvement, I would rather advise *Inoculation*, as the ordinary *Elm* upon the *Witch-Hazel*, for those large *leaves* we shall anon mention, and which are so familiar in *France*.

6. That the Transplanting of young *Oaks* gains them ten years Advance, some happy persons have affirmed: from this belief, if in a former *Impression* I have desir'd to be excus'd, and product my Reasons for it, I shall not persist against any sober mans *Experience*; and therefore leave this *Article* to their choice; since (as the *Butchers* phrase is) change of *Pasture* makes fat *Calves*; and so *Transplantations* of these hard-wood-trees, when young, may possibly, by an happy hand, in fit season, and other circumstances of *Soil*,

*Sun*,

*sun*, and *Room* for growth, be an improvement: But as for those who advise us to plant *Oaks* of too great a stature, they hardly make any considerable progress in an *Age*, and therefore I cannot encourage it; unless the ground be extraordinarily qualified, or that the *Oak* you would *transplant*, be not above 6 or 7 foot growth in height: Yet if any be desirous to make *trial* of it, let their *Stems* be of the smoothest, and tenderest *Bark*; for that is ever an indication of *youth*, as well as the paucity of their *Circles*, which in disbranching, and cutting the head off, at *five*, or *six* foot height (a thing, by the way, which the *French* usually spare when they *Transplant* this *Tree*) may (before you stir their *Roots*) serve for the more certain *Guide*; and then plant them immediately, with as much Earth as will adhere to them, in the place destin'd for their *station*; abating only the *tap roots*, which is that down-right, and stubby part of the *Roots* (which all *Trees* rais'd of *Seeds* do universally produce) and quickning some of the rest with a sharp *knife* (but sparing the *Fibrous*, which are the main *Suckers* and *Mouths* of all *Trees*) spread them in the *foss* or *pit* which hath been prepar'd to receive them. I say in the *foss*, unless you will rather *trench* the whole *Field*, which is incomparably the best; and infinitely to be preferr'd before narrow *pits* and holes (as the manner is) in case you plant any number considerable, the Earth being hereby made *loose*, *easier* and *penetrable* for the *Roots*, about which you are to cast that *Mould*, which (in opening of the *Trench*) you took from the *Surface*, and purposely laid apart; because it is sweet, mellow, and better *impregnated*: But in this *Work*, be circumspect never to *interr* your *Stem* deeper than you found it standing; for profound *burying* very frequently destroys a *Tree*, though an *Error* seldom observed: If therefore the *Roots* be sufficiently cover'd to keep the *Body* steady and erect, it is enough; and the not minding of this trifling *Circumstance*, does very much deceive our ordinary *Wood-men*: For most *Roots* covet the *Air* (though that of the *Quercus urbana* least of any, for like the *Æsculus*

How much to heaven her towering head ascends,  
So much towards hell her piercing root extends.

— Quod quantum vertice ad auras  
Æthereas, tantum radicem Tartara tendit.

Geo. 2.

And the perfection of *that*, does almost as much concern the prosperity of a *Tree*, as of *Man* himself, since *Homo* is but *Arbor inversa*; which prompts me to this *curious*, but important *Advertisement*; That the *Position* be likewise sedulously observed.

7. For, the *southern* parts being more *dilated*, and the pores expos'd (as evidently appears in their *Horizontal sections*) by the constant *Excentricity* of their *Hyperbolical Circles*, being now on the *sudden*, and at such a season converted to the *North*, does *starve*, and destroy more *Trees* (how careful soever men have been in ordering the *Roots*, and preparing the *Ground*) than any other *Accident* whatsoever (neglect of *staking*, and *defending* from *Cattle* excepted) the importance whereof caused the best of *Poets*, and most experienc'd, in this *Argument*, giving advice concerning this *Article*, to add.

The Card'nal points upon the Bark they sign,  
And as before it stood, in the same line  
Place to warm south, or the obverted pole;  
Such force has custome, in each tender Soul.

*Quintiam tali regionem in cortice signant,  
Ut quo queque modo steterit, qua parte calores  
Austriños tulerit, qua terga obverterit axi,  
Resistant: Adeo in teneris consuescere multum est.*

Geor. li. i.

Which *Monition*, though *Pliny*, and some *others* think good to neglect, or esteem *indifferent*, I can confirm from frequent losses of my own, and by particular *trials*; having sometimes *Transplanted* great trees at *Mid-summer* with success (the *Earth* adhering to the *Roots*) and miscarried in others, where this *Circumstance* only was omitted.

To observe therefore the *Coast*, and side of the *Stock* (especially of *Fruit-trees*) is not such a trifle as by some pretended: For if the *Air* be as much the *Mother* or *Nurse*, as *Water* and *Earth*, (as more than probable it is) such blossoming *Plants* as court the motion of the *Meridian Sun*, do as'twere evidently point out the advantage they receive by their *position*, by the clearness, politure, and comparative splendor of the *South side*: And the frequent *mossiness* of most *Trees* on the opposite side, does sufficiently note the unkindness of that *Aspect*; and which is most evident in the bark of *Oaks* white, and smooth; The *Trees* growing more kindly on the *South* side of an *Hill*, than those which are expos'd to the *North*, with an hard, dark, rougher, and more mossie *Integument*, as I can now demonstrate in a prodigious coat of it, investing some *Pyracanth*s which I have removed to a *Northern* dripping shade. I have seen (writes a worthy Friend to me on this occasion) whole *Hedge-rows* of *Apples*, and *Pears* that quite perished after that shelter was removed: The good *Husbands* expected the contrary, and that the *Fruit* should improve, as freed from the predations of the *Hedge*; but use and custom made that shelter necessary; and therefore (saith he) a *Stock* for a time is the weaker, taken out of a *Thicket*, if it be not well protected from all sudden and fierce invasions either of crude *Air* or *Winds*. Nor let any be deterr'd, if being to remove many *Trees*, he shall esteem it too consumptive of time; for with a *Brush* dipped in any white colour, or *Oaker*, a thousand may be marked as they stand, in a moment; and that once done, the difficulty is over. I have been the larger upon these two *Remarks*, because I find them so *material*, and yet so much neglected.

8. There are other *Rules* concerning the *situation* of *Trees*; the former *Author* commending the *North-east-wind* both for the flourishing of the *Tree*, and advantage of the *Timber*; but to my observation in our *Climates*, where those sharp *winds* do rather *flanker* than blow fully opposite upon our *Plantations*, they thrive best; and there are as well other circumstances to be considered, as they respect *Rivers*, and *Marshes* obnoxious to unwholsom and poysonous *Fogs*; *Hills*, and *Sea*, which expose them to the weather; and those *sylvifragi venti*, our cruel, and tedious *Western-winds*; all which I leave to Observation, because these *Accidents* do so universally govern, that it is not easie to determine farther than



than that the *Timber* is commonly better qualified which hath endur'd the colder Aspects without these prejudices. And hence it is, that *Seneca* observes, *Wood* most expos'd to the *Winds* to be the most strong and solid, and that therefore *Chiron* made *Achilles's* Spear of a *Mountain-tree*; and of those the best, which grow thin, not much shelter'd from the North. Again, *Theophrastus* seems to have special regard to places; exemplifying in many of Greece, which exceeded others for good *Timber*, as doubtless do our *Oaks* in the *Forest* of *Dean* all others of *England*; and much certainly there may reasonably be attributed to these advantages for the growth of *Timber*, and of almost all other *Trees*, as we daily see by their general improsperity, where the ground is a hot gravel, and a loose earth: An *Oak*, or *Elme* in such a place shall not in an hundred years, overtake one of fifty planted in its proper Soil; though next to this, and (haply) before it, I prefer the good Air. But thus have they such vast *Junipers* in *Spain*; and the *Ashes* in some parts of the *Levant* (as of old near *Troy*) so excellent, as it was after mistaken for *Cedar*, so great was the difference; as now the *Cantabrian*, or *Spanish* exceeds any we have elsewhere in *Europe*. And we shall sometimes in our own *Country* see *Woods* within a little of each other, and to all appearance, growing on the same Soil, where *Oaks* of twenty years growth, or forty, will in the same bulk, contain their double in *Heart* and *Timber*; and that in one, the *Heart* will not be so big as a mans *Arm*, when the trunk exceeds a mans body: This ought therefore to be weighed, in the first plantation of *Copses*, and a good Eye may discern it in the first shoot; the difference proceeding doubtless from the variety of the Seed, and therefore great care should be had of its goodness, and that it be gather'd from the best sort of *Trees*, as was formerly hinted, c. 1.

9. *Veterem Arborem Transplantare* was said of a difficult enterprise; Yet before we take leave off this Paragraph, concerning the Transplanting of great *Trees*, and to shew what is possible to be effected in this kind, with cost, and industry; *Count Maurice* (the late *Governour* of *Brasil* for the *Hollanders*) planted a *Grove* near his delicious *Paradise* of *Friburge*, containing six hundred *Coco-trees* of eighty years growth, and fifty foot high to the nearest bough: these he waisted upon *Floats*, and *Engines*, four long miles, and planted them so luckily, that they bare abundantly the very first year; as *Gasper Barlaeus* hath related in his elegant *Description* of that *Princes* expedition. Nor hath this only succeeded in the *Indies* alone; *Monsieur de Fiat* (one of the *Marshals* of *France*) hath with huge *Oaks* done the like at *Fiat*. Shall I yet bring you nearer home? A great person in *Devon*, planted *Oaks* as big as twelve *Oxen* could draw, to supply some defect in an *Avenue* to one of his houses; as the Right Honourable the Lord *Fitz-Harding*, late *Treasurer* of his *Majesties* household, assur'd me; who had himself likewise practis'd the *Removing* of great *Oaks* by a particular address extremely ingenious, and worthy the communication.

10. Chuse a *Tree* as big as your *high*, remove the earth from about

bout him ; cut through all the *collateral* Roots, till with a competent strength you can enforce him down upon one side, so as to come with your *Ax* at the *Tap-root* ; cut *that* off, redress your *Tree*, and so let it stand cover'd about with the *Mould* you loosen'd from it, till the next year, or longer if you think good ; then take it up at a fit season ; it will likely have drawn new tender *Roots* apt to take, and sufficient for the *Tree*, wheresoever you shall *Transplant* him. *Pliny* notes it as a common thing, to re-establish huge *Trees* which have been blown down, part of their *Roots* torn up, and the body prostrate ; and, in particular, of a *Firr*, that when it was to be *Transplanted*, had a *tap-root* which went no less than *eight* cubits *perpendicular* ; and to these I could superadd, but I proceed. To facilitate the *Removal* of such monstrous *Trees*, for the *Adornment* of some particular *place*, or the rarity of the *Plant*, there is this *expedient*. A little before the hardest *Frosts* surprize you, make a square *Trench* about your *Tree*, at such distance from the *Stem* as you judge sufficient for the *Root* ; dig this of competent depth, so as almost quite to undermine it ; by placing *blocks*, and *quarters* of wood, to sustain the *Earth* ; this done, cast in as much *Water* as may fill the *Trench*, or at least sufficiently wet it, unless the ground were very moist before. Thus let it stand, till some very hard *Frost* do bind it firmly to the *Roots*, and then convey it to the *pit* prepar'd for its new station, which you may preserve from *freezing*, by laying store of warm *littier* in it, and so close the mould the better to the straggling *Fibers*, placing what you take out about your new guest, to preserve it in temper : But in case the mould about it be so *ponderous* as not to be remov'd by an ordinary force ; you may then raise it with a *Crane*, or *Pully* hanging between a *Triangle*, which is made of three strong, and tall *Limbs* united at the top, where a *Pully* is fastned, as the *Cables* are to be under the quarters which bear the earth about the *Roots* : For by this means you may weigh up, and place the whole weighty *Clod* upon a *Trundle* to be convey'd, and *Replanted* where you please, being let down perpendicularly into the place by the help of the foresaid *Engine*. And by this *address* you may *Transplant* *Trees* of a wonderful *stature*, without the least disorder ; and many times without *topping*, or diminution of the *head*, which is of great importance, where this is practis'd to supply a *Defect*, or remove a *Curiosity*.

11. Some advise, that in planting of *Oaks*, &c. *four*, or *five*, be suffer'd to stand very near to one another, and then to leave the most *prosperous*, when they find the rest to disturb his growth ; but I conceive it were better to plant them at such *distances*, as they may least incommode one another : For *Timber-trees*, I would have none nearer than *forty* foot where they stand *closest* ; especially of the spreading kind.

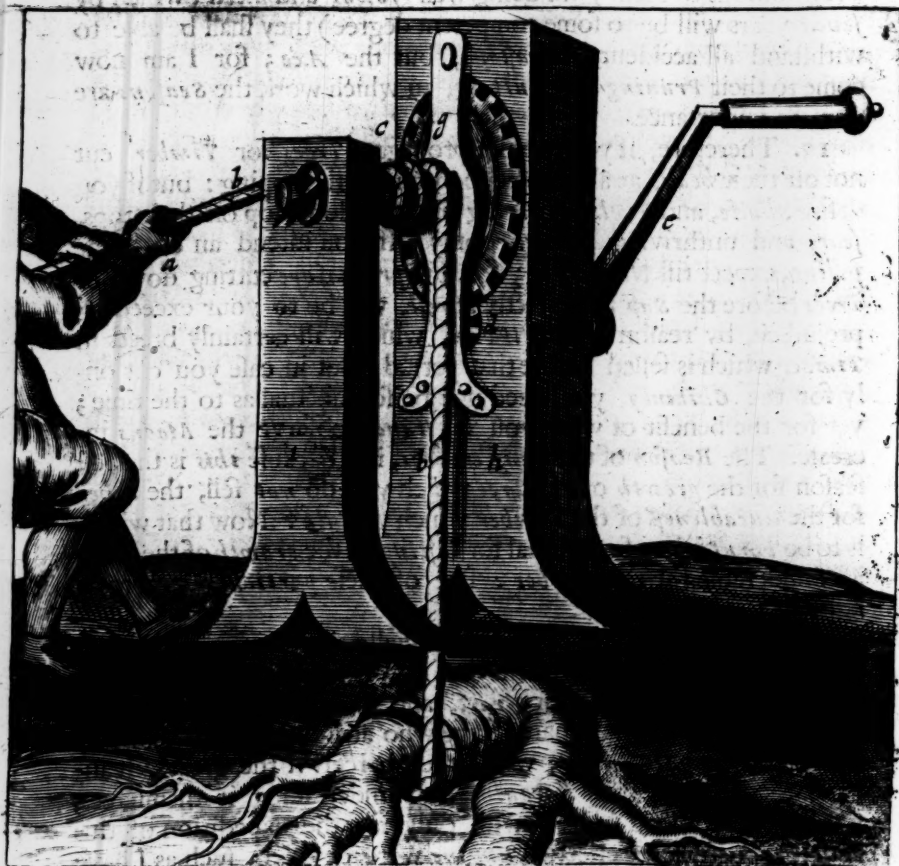
12. Lastly, *Trees* of ordinary stature *Transplanted* (being first well *water'd*) must be sufficiently *shaded*, and *Bush'd* about with *thorns*, or with something better, to protect them from the concussions of the *Winds*, and from the casual *rubbing*, and poysonous brutting of *Cattle* and *Sheep*, the *ovilineſs* of whose *Wool* is also very

very noxious to them; till being well *grown*, and *fixed* (which by *seven* years will be to some competent degree) they shall be able to withstand all accidental *invasions*, but the *Axe*; for I am now come to their *Pruning* and *Cutting*, in which work the *Seasons* are of main importance.

13. Therefore, if you would propagate *Trees* for *Timber*, cut not off their *heads* at all, nor be too busy with lopping: but if you desire *Shade*, and *Fuel*, or bearing of *Wax* alone, lop off their tops, *sear*, and unthriving *Branches* only; If you intend an *out-right felling*, expect till *November*; for this *premature* cutting down of *Trees* before the *Sap* is perfectly at rest, will be to your exceeding prejudice, by reason of the *Worm*, which will certainly breed in *Timber* which is felled before that period: But in case you cut only for the *Chimney*, you need not be so punctual as to the time; yet for the benefit of what you let stand, observe the *Moons* increase. The *Reason* of these differences, is; because *this* is the best season for the *growth* of the *Tree* which you do not fell, the *other* for the *durableness* of the *Timber* which you do: Now that which is to be *burnt* is not so material for *lasting*, as the *growth* of the *Tree* is considerable for the *Timber*: But of these particulars, more at large in *Cap. 30*.

14. The very *stumps* of *Oak*, especially that part which is dry, and above ground, being well grubb'd, is many times worth the pains and charge, for sundry rare, and hard works; and where *Timber* is dear. I could name some who abandoning this to *workmen* for their pains only, when they perceiv'd the great advantage, repented of their *Bargain*, and undertaking it themselves, were gainers above half: I wish only for the expedition of this *Knotty* work, some effectual *Engine* were devised; such as I have been told a *worthy* Person of this *Nation* made use of, by which he was able with *one man*, to perform more than with *twelve Oxen*; and surely, there might be much done by fastning of *Iron hooks* and *fangs* about one *Root*, to extract another; the *hook* chain'd to some portable *Screw* or *Winch*: Ifay, such an invention might effect wonders, not only for the extirpation of *Roots*, but the prostrating of huge *Trees*: That small *Engine*, which by some is call'd the *German-devil*, reform'd, after this manner, and duly applied, might be very expedient for this purpose, and therefore we have exhibited the following figure, and submit it to improvement.





*a, The hand that keeps the Rope b, close upon the Cylinder c, which is moved by a Pinnion of three or four teeth d, which moves a larger Iron Wheel f. e the Handle put upon the Spindle of the Pinnion, to turn it withal.*

*The whole Frame is let into a bigger piece of Wood, viz. b, being about four foot in length, and one in breadth, and the other end of the Roller or Cylinder, is sustain'd by a lesser block of Wood (i) g, the Plate which holds the Wheel and Pinnion in the larger block. Note,*

*That the Cylinder may be made of good tough Iron, about four inches in diameter, and fourteen or sixteen inches in length, and the tooth'd Wheel f, of the like stuff, and of a thickness proportionable: the rest is obvious.*

But this is to be practis'd only where you design a final extirpation; for some have drawn suckers even from an old stub-root; but they certainly perish by the Moss which invades them, and are very subject to grow rotten. Pliny speaks of one Root, which took up an intire Acre of Ground, and Theophrastus describes the Lycean Plata-

now to have spread an hundred foot; if so, the *Argument* may hold good for their growth after the *Tree* is come to its period. They made *Cups* of the *Roots* of *Oak* heretofore, and such a curiosity *Athenius* tells us was carv'd by *Thericleus* himself; and there is a way so to tinge *Oak* after long burying and soaking in *Water* (which gives it a wonderful *politure*) as that it has frequently been taken for a course *Ebony*.

15. There is not in *nature* a thing more obnoxious to *deceit*, than the buying of *Trees* *standing*, upon the reputation of their *Appearance* to the *eye*, unless the *Chapman* be extraordinarily judicious; so various are their *hidden*, and conceal'd *Infirmities*, till they be *fell'd*, and *sawn* out: so as if to any thing *applicable*, certainly there is nothing which does more perfectly confirm it, than the most flourishing *out-side* of *Trees*, *Fronti nulla fides*. A *Timber-tree* is a *Merchant Adventurer*, you shall never know what he is *worth*, till he be *dead*.

16. *Oaks*, are in some places (where the soil is *specially* qualified) ready to be cut for *Cops* in *fourteen* years and sooner; I compute from the first *semination*; though it be told as an instance of high encouragement (and as indeed it merits) that a *Lady* in *Northamptonshire* sowed *Acorns*, and liv'd to cut the *Trees* produc'd from them, *twice*, in *two* and *twenty* years; and both as well grown as most are in *sixteen* or *eighteen*. This yet is certain, that *Acorns* set in *Hedg-rows*, have in thirty years born a *stem* of a foot *diametre*. Generally, *Cops* *wood* should be cut *close*, and at such *Intervals* as the growth requires; which being seldom constant, depends much on the *places*, and the *kinds*, the *mould* and the *air*, and for which there are extant particular *Statutes* to direct us, of all which more at large hereafter. *Oak* for *Tan-bark* may be *fell'd* from *April* to the last of *June*, by a *Statute* in the 1 *Jacobi*.

17. To enumerate now the incomparable *Uses* of this *Wood*, were needless: But so precious was the esteem of it, that of *Old* there was an express *Law* amongst the *Twelve Tables*, concerning the very gathering of the *Acorns*, though they should be found fallen into another mans *Ground*: The *Land* and the *Sea* do sufficiently speak for the improvement of this excellent material; *Houses*, and *Ships*, *Cities*, and *Navies* are built with it; and there is a *kind* of it so *tough*, and extremely compact, that our sharpest *Tools* will hardly enter it, and scarcely the very *Fire* it self, in which it consumes but slowly, as seeming to partake of a *ferruginous*, and *metallin* shining nature, proper for sundry robust *Uses*. It is doubtless of all *Timber* hitherto known, the most universally useful and strong; for though some *Trees* be harder, as *Box*, *Cornus*, *Ebony*, and divers of the *Indian Woods*; yet we find them more fragil, and not so well qualified to support great incumbencies and weights, nor is there any *Timber* more *lasting* which way soever us'd. There has (we know) been no little stir amongst *Learned* men of what material the *Cross* was made, on which our blessed *Saviour* suffer'd: *Venerable Bede* in *Collectaneis*, affirms it to have been fram'd of *Several Woods*, namely, *Cypress*, *Cedar*, *Pine*, and *Box*; and to

confirm it, St. Hierom has cited the 6 of *Isaiah* 13. *Gloria Libani ad te veniet, & Buxus & Pinus simul ad ornandum locum sanctificationis meae, & locum Pedum meorum significabo*; but following the Version of the Lxx. he reads in *Cupresso, Pinu & Cedro*, &c. others insert the *Palm*, and so compose the *Gibbet* of no less than four different *Timbers*, according to the old verse:

Nail'd were his Feet to Cedar, to Palm his hands;  
Cypress his Body bore, Title on Olive stands:

*Quatuor ex lignis Domini Crux dicitur esse, &c.  
Pes Crucis est Cedrus, Corpus tenet alta Cupressus;  
Palma manus retinet, Titulo latatur Oliva.*

And for this of the *Palm*, they fetch it from that of 7. *Cant.* 8. where 'tis said, *Ascendam in Palmam, & apprehendam fructus ejus*, and from other *Allegorical*, and *Mysterious* expressions of the sacred *Text*, without any manner of probability; Whilst by *Alphonsus Ciaconus, Lipsius, Angelus Rocca, Falconius*, and divers other learned men (writing on this subject) and upon accurate examination of the many fragments pretended to be parcells of it, 'tis generally concluded to have been the *Oak*, and I do verily believe it; since those who have described those *Countries*, assure us there is no Tree more frequent; which (with relation to several celebrations and *Mysteries* under *Oaks* in the *Old Testament*) has been the subject of many fine discourses. Nor is it likely they should choose, or assemble so many sorts of *Woods* with that curiosity, to execute one upon, whom they esteem'd a Malefactor; besides, we read how heavy it was, which *Cypress*, *Cedar*, and *Palm* are not in comparison with *Oak*, whilst *Gretser* denies all this, *lib. 1. cap. 6.* and concludes upon his accurate examination of several fragments yet extant, that 'tis not discernable of what *Timber* it was fram'd. That which is twin'd, and a little wreathed (easily to be discern'd by the texture of the *Bark*) is best to support *Burthens*, for *Posts, Columns, Summers*, &c. for all which our *English Oak* is infinitely preferable to the *French*, which is nothing so useful, nor comparably so strong; insomuch as I have frequently admir'd at the sudden failing of most goodly *Timber* to the Eye, which being imploy'd to these *Uses*, does many times most dangerously flie in sunder, as wanting that native spring, and toughness, which our *English Oak* is indu'd withal. And here we forget not the stress which Sir *H. Wotton*, and other *Architects* put even in the very position of their growth, their native straightness and loftiness, for *Columns, Supporters, Cross-beams*, &c. and 'tis found that the rough grain'd body of a stubbed *Oak*, is the fittest *Timber* for the Case of a *Cider-Mill*, and such like *Engines*, as best enduring the unquietness of a ponderous *Rolling-Stone*. For *Shingles, Pales, Lathes, Coopers ware, Clap-board for Wainscot*, and some *Pannells*, are curiously vein'd, of much esteem in former times, till the finer grain'd *Spanish*, and *Normay Timber* came amongst us, which is likewise of a whiter colour. There is in *New-England* a certain *Red-Oak*, which being fell'd, they season in some moist, and muddy place, which branches into very curious works. It is observ'd that *Oak* will not easily glue



glue to other Wood; no not very well with its own kind; and some sorts will never cohere tolerably, as the Box and Horn-beam, though both hard woods; so nor Service with Cornell; &c. Oak is excellent for Wheel-spokes, Pinnis and Peggs for Tying, &c. Mr. Blith makes Sparrs, and small building-Timber of Oaks of eleven years growth, which is a prodigious advance, &c. the smallest, and straightest is best; discover'd by the upright tenor of the Bark, as being the most proper for cleaving: The knottiest for Water-works, Piles and the like; because 'twill drive best, and last longest; the crooked, yet firm, for knee-timber in shipping, Mill-wheels, &c. Were planting of these Woods more in use, we should banish our hoops of Hasel, &c. for those of good copse-Oak, which being made of the younger shoots, are exceeding tough and strong: One of them being of Ground-Oak, will outlast six of the best Ash; but this our Coopers love not to hear of, who work by the great for Sale, and for others. The smaller trunchions, and spray, make Billet, Bawine and Coals; and the Bark is of price with the Tanner and Dyer, to whom the very Saw-dust is of use, as are the Ashes and Lee for bucking Linnen, and to cure the roapishness of Wine: And 'tis probable the Cups of our Acorns would tan Leather as well as the Bark, I wonder nobody makes the experiment. The Ground-Oak while young, is us'd for Poles, Cudgels and walking-staffs, much come into mode of late, but to the wast of many a hopeful Plant which might have prov'd good Timber; and I the rather declaim against the Custom, because I suspect they are such as are for the most part cut, and stolen by idle Persons, and brought up to London in great bundles, without the knowledg or leave of the Owners, who would never have glean'd their Coppes for such trifling uses: Here I am again to give a general notice of the peculiar excellency of the Roots of most Trees, for fair, beautiful, chamleted, and lasting Timber, applicable to many purposes; such as formerly made Hafts for Daggers, Hangers, Knives, Handles for staves, Tobacco-Boxes, and elegant Joiners-work, and even for some Mathematical Instruments of the larger size, to be had either in, or near the Roots of many Trees; however 'tis a kindness to premonish Stewards and Surveyors, that they do not negligently waste those materials: Nor may we here omit to mention the Galls, Missetoe, Polypod, Agaric (us'd in Antidots) Uve, Fungus's to make Tinder, and many other useful Excrescencies, to the number of above twenty, which doubtless discovers the variety of transudations, percolations and contextures of this admirable Tree; but of the several Fruits, and Animals generated of them, and other Trees, Francisco Redi promises an express Treatise, in his *Experienze intorno alla Generatione de gl'Insetti*, already publish'd. Pliny affirms that the Galls break out altogether in one night about the beginning of June, and arrive to their full growth in one day; this I recommend to the experience of some extraordinary vigilant Wood-man. Galls are of several kinds, but grow upon a different species of Robur from any of ours, which never arrive to any maturity; the white and imper-

Vide Johan. de Choul, De varia Quercus historia.

forated are the best. What benefit the *Mast* does universally yield for the fattening of *Hogs* and *Deer*; I shall shew upon another occasion, before the conclusion of this Discourse. A Peck of *Acorns* a day, with a little *Bran*, will make an *Hog* ('tis said) increase a pound-weight *per diem* for two months together. They give them also to *Oxen* mingled with *Bran*, chop'd or broken; otherwise they are apt to sprout, and grow in their bellies. Others say, they should first be macerated in *water*, to extract their malignity, *cattel* many times perishing without this preparation. *Cato* advises the *Husband-man* to reserve 240 bushels of *Acorns* for his *Oxen*, mingled with a like quantity of *Beans* and *Lupines*, and to drench them well. But in truth they are more proper for *Swine*, and being so made small, will fatten *Pigeons*, *Peacocks*, *Turkies*, *Pheasants*, and *Poultry*; nay 'tis reported, that some *Fishes* feed on them, especially the *Tunny*, in such places of the coast where trees hang over Arms of the Sea. *Acorns* were heretofore the food of *Men*, nay of *Jupiter* himself, (as well as other productions of the Earth) till their luxurious palats were debauched: and even in the *Romans* time, the custom was in *Spain* to make a second service of *Acorns* and *Mast*, (as the *French* now do of *Marrons* and *Chestnuts*) which they likewise used to roast under the embers.

— Fed with the Oaken Mast  
The aged Trees themselves in years surpass'd.

— Et quernâ glande repasta  
Aequasse annosâs vivendo corpora Quercus.

And men had indeed *beasts of Oak*; I mean, not so hard, but *health*, and *strength*, and liv'd naturally, and with things easily parable and plain.

Blest Age o' th' world, just Nymph, when Man did dwell  
Under thy shade, whence his provision fell;  
Salads the meal, Wildings were the Diet;  
No Tree yet learn'd by ill-exempl'd Art  
With insidious fruit to symbolize,  
As in an Emblem, our Adulteries.

Felix illa ætas mundi, justissima Nympe,  
Cum dabat umbra domum vitam tua, cum domus ipsa  
Decidua Dominos pascibat fruge quiritos,  
Solâque præbebant Sylvæstria poma secundas  
Gramineis epulas mensis; nondum arte magistra  
Arbor Adulteriis præluserat instæ nostris, &c.

Coulci Pl. L. 6.

as the sweet Poet bespeaks the *Dryad*; But 'tis in another place where I shew you what this *Acorn* was; and even now I am told, that those small young *Acorns* which we find in the *Stock-doves* Crows, are a delicious fare, as well as those incomparable *Salads* of young herbs taken out of the maws of *Partridges* at a certain season of the year, which gives them a preparation far exceeding all the art of *Cookery*. *Oaks* bear also a *knurr*, full of a cottony matter, of which they anciently made *Wick* for their *Lamps* and *Candles*; and among the *selectiora Remedia* of *Jo. Prævotius*, there is mention of an Oil è quernâ glande Chymically extracted, which he affirms to be of the longest continuance, and least consumptive of any other whatsoever for such lights, ita ut uncia singulis mensibus vix absumatur continuo igne. The leaves of *Oaks* abundantly congested on *snow*, preserves it as well for *wine*, as a deep pit, or the most artificial *Refrigeratory*. *Varro* affirms, they made *Salt* of *Oak* ashes, with which they sometimes seasoned meat, but more frequently

quently made use of it to sprinkle among, and fertilize their seed-corn: which minds me of a certain *Oak* found buried somewhere in *Transilvania*, near the *Salt-pits*, that was intirely converted into an hard *salt*, when they came to examine it by cutting. This experiment (if true) may possibly encourage some other attempts for the multiplying of *salt*. Of the *Galls* is made the ground and basis of *Inks* and several *Dyes*, especially sadder colours, and are a great revenue to those who have quantities of them. The very *Atoss* of the *Oak*, viz. that which is *white*, composes the choicest *Cypress-powder*, which is esteemed good for the head: but *Impostors* familiarly vend other *Mosses* under that name, as they do the *Fungi* for the true *Agaric*, to the great scandal of *Physick*. Young red *Oaken* leaves decocted in *wine*, make an excellent gargle for a sore mouth; and almost every part of this *Tree* is sovereign against *Fluxes* in general. The dew that impearls the leaves in *May*, insolated, meteorizes and sends up a *liquor*, which is of admirable effect in *Ruptures*: And a *water* distilled from the *Acorns* is good against the *Phthisick*, *Stitch* in the side, and heals inward *Ulcers*, breaks the *Stone*, and refrigerates *Inflammations*, being applied with *Linnen* dip'd therein: nay, the *Acorns* themselves eaten fasting, kill the *worms*, provoke *wine*, and (some affirm) break even the *Stone* it self. The *Coals* of *Oak* beaten and mingled with *honey*, cures the *Carbuncle*; to say nothing of the *Viscus's*, *Polypods*, and other *Excrescences*, of which innumerable *Remedies* are composed, noble *Antidotes*, *Syrups*, &c. Nay, 'tis reported, that the very shade of this tree is so wholesome, that the sleeping, or lying under it becomes a present remedy to *Paralyticks*, and recovers those whom the mistaken malign influence of the *Walnut-tree* has smitten: nay I read in one *Paulus* a *Physician* of *Denmark*, That an handful or two of small *Oak* buttons, mingled with *Oats*, given to *Horses* which are black of colour, will in few days eating alter it to a fine *Dapple-grey*, which he attributes to the *Vitriol* abounding in this *Tree*. To conclude, and upon serious meditation of the various uses of this, and other trees, we cannot but take notice of the admirable *Mechanism* of *Vegetables* in general, as in particular in this species; that by the diversity of *Percolations* and *Strainers*, and by mixtures as it were of divine *Chymistry*, various concoctions, &c. the sap should be so green on the indented leaves, so lustily esculent for our hardier, and rustick Constitutions in the fruit; so flat and pallid in the *Atramental Galls*; and haply, so prognostick in the *Apple*; so suberous in the *Bark* (for even the *Cork-tree* is but a courser *Oak*) so Oozie in the *Tanners pit*; and in that subduction so wonderfully specifick in corroborating the *Entrails*, and *Bladder*, *Reins*, *Loins*, *Back*, &c. which are all but the gifts and qualties, with many more, that these robust sons of the Earth afford us; and that in other specifics, even the most despicable and vulgar *Elder* imparts to us in its rind, leaves, buds, blossoms, berries, ears, pith, bark, &c. Which hint may also carry our remarks upon all the varieties of Shape, Leaf, Seed, Fruit, Timber, Grain, Colour, and all those other forms that *Philosophers* have enumerated;

but



but which were here too injurious for us to repeat. Let us end with the Poet:

When Ships for bloody combat we prepare,  
Oak affords plank, and arms our Men of War;  
Maintains our fires, makes plows to till the ground,  
For use no Timber like the Oak is found.

*Si quando armandæ navis, & bella paranda,  
Det quercus nautis tabulata, det arma furori  
Bellantum; det ligna foca, det aratra colono,  
Aut aliis aliis porro sumatur in usus.*

Rapinus.

## C H A P. IV.

### Of the Elm.

Elm.

1. **U***lmus* the Elm, There are four, or five sorts, and from the difference of the *Soil* and *Air* divers *spurious*: Two of these kinds are most worthy our culture, the vulgar, viz. the *Mountain Elm*, which is taken to be the *Oriptelea* of *Theophrastus*; being of a less jagged and smaller leaf; and the *Vernacula* or *French Elm*, whose leaves are thicker, and more florid, *glabrous* and smooth, delighting in the lower and moister grounds, where they will sometimes rise to above an hundred foot in height, and a prodigious growth, in less than an *Age*; my self having seen one planted by the hand of a *Countess* yet living, which near *twelve* foot in *compass*, and of an *height* proportionable; notwithstanding the numerous progeny which grows under the shade of it, some whereof are at least a foot in *Diameter*, that for want of being seasonably *transplanted*, must needs have hindered the procerity of their ample and indulgent *Mother*: I am persuaded some of these are *Viviradices*, & *Traduces* produc't of the falling *seeds*.

2. For though both these sorts are rais'd of *Appendices*, or *Suckers* (as anon we shall describe) yet this latter comes well from the *Samera* or *Seeds*, and therefore I suppose it to be the antient *Atinea*, for such an Elm they acknowledge to be rais'd of *Seeds*, which being *ripe* about the beginning of *March* (though frequently not till the following Month) will produce them; as we see abundantly in the *Gardens* of the *Thuylleries*, and that of *Luxembourg*, at *Paris*, where they usually sow themselves and come up very thick; and so do they in many places of our Countrey, though so seldom taken notice of, as that it is esteemed a *fable*, by the less observant and ignorant vulgar; let it be tried in *season*, by turning and raking some fine earth, often refreshed, under some amply spreading *Tree*, or to raise them of their *Seeds* (being well dried a day or two before) sprinkled in *Beds* prepar'd of good loamy fresh earth, and sifting some of the finest mould thinly over them, and watering them when need requires. Being risen (which may be within 4 or 5 months) an inch above ground (refreshed, and preserved from the scraping of *Birds* and *Poultry*) comfort the tender

der *seedlings* by a second sifting of more fine earth, to establish them; thus keep them clean *weeded* for the first *two years*, and cleansing the side-boughs; or till being of fitting stature to *remove* into a *Nursery* at wider intervals, and even rows, you may *thin*, and *Transplant* them in the same manner as you were directed for young *Oaks*; only they shall not need above one cutting, where they grow less regular and hopeful. But because this is an *Experiment* of some *curiosity*, obnoxious to many casualties, and that the producing them from the *Mother-roots* of greater Trees is very facile and expeditious (besides the numbers which are to be found in the *Hedge-rows*, and *Wood*, of all plantable sizes) I rather advise our *Forester* to furnish himself from those places.

3. The *Suckers* which I speak of are produced in abundance from the *Roots*, whence, being *dextrously* separated, after the Earth has been well loosned, and planted about the end of *October*, they will grow very well: Nay, the *stubs* only, which are left in the ground after a *felling* (being fenced in as far as the *Roots* extend) will furnish you with plenty, which may be *transplanted* from the *first year* or *two*, successively, by slipping them from the *Roots*, which will continually supply you for many years, after that the body of the Mother-tree has been cut down: And from hence probably is sprung that (I fear) mistake of *Salmasius* and others, where they write of the growing of their *Chips* (I suppose having some of the Bark on) scattered in hewing of their *Timber*; the *Error* proceeding from this, that after an *Elm-tree* has been *fell'd*, the numerous *Suckers* which shoot from the remainders of the *latent* *Roots*, seem to be produced from this dispersion of the *Chips*: Let this yet be more accurately examined; for I pronounce nothing *Magisterially*, since it is so confidently reported.

4. I have known *Stakes* sharpened at the ends for other purposes, take root familiarly in moist grounds, and become *Trees*; and divers have essay'd with extraordinary success the trunchions of the Boughs and Arms of *Elms* cut to the scantling of a mans arm, about an *ell* in length. These must be chopp'd on each side opposite, and laid into *trenches* about half a foot deep, covered about two or three fingers deep with good mould. The season for this work is towards the *exit* of *January*, or early in *February* if the Frosts impede not; and after the first year, you may cut, or saw the *trunchions* off in as many places as you find cause, and as the shoots and rooted Sprouts will direct you, for *transplantation*. Another expedient for the propagation of *Elms* is this; let *trenches* be sunk at a good distance (*viz.* twenty, or thirty *yards*) from such *Trees* as stand in *Hedge-rows*, and in such order as you desire your *Elms* should grow; where these gutters are, many young *Elms* will spring from the small roots of the adjoining *Trees*. Divide (after one year) the *shoots* from their *Mother-roots*, which you may *dextrously* do with a sharp *spade*: These *transplanted*, will prove good *Trees* without any damage to their Progenitors. Or do thus, *Log* a young *Elm*, the *lop* being about  
three

three years growth, do it in the latter end of *March*, when the *Sap* begins to creep up into the Boughs, and the *Buds* ready to break out; cut the Boughs into lengths of four foot slanting, leaving the *knot* where the *bud* seems to put forth in the middle: Interr these short pieces in *trenches* of three or four inches deep, and in good *mould* well trodden, and they will infallibly produce you a Crop, for even the smallest *suckers* of *Elms* will grow being set when the *sap* is newly stirring in them. There is yet a fourth way no less expeditious, and frequently confirmed with excellent success: *Bare* some of the Master-roots of a vigorous *Tree* within a foot of the *Trunk*, or thereabouts, and with your *Axe* make several Chops, putting a small stone into every *cleft*, to hinder their closure, and give access to the *wet*; then cover them with three, or four *inch* thick of *Earth*; and thus they will send forth *Suckers* in abundance (I assure you one single *Elm* thus well ordered, is a fair *Nursery*) which after two or three years, you may separate and plant in the *Ulmarium*, or place designed for them; and which if it be in *Plumps* (as they call them) within ten or twelve foot of each other, or in *Hedge-rows*, it will be the better: For the *Elm* is a *Tree* of *Consort*, *Sociable*, and so affecting to grow in Company, that the very best which I have ever seen, do almost touch one another: This also protects them from the *Winds*, and causes them to shoot of an extraordinary *height*; so as in little more than *forty years*, they even arrive to a load of *Timber*; provided they be sedulously and carefully cultivated, and the *Soil* propitious. For an *Elm* does not thrive so well in the *Forest*, as where it may enjoy scope for the *Roots* to dilate and spread at the sides, as in *Hedge-rows* and *Avenues*, where they have the *Air* likewise free: note, that they do properly by *Layers* also.

5. There is besides these sorts we have named, one of a more *Scabrous* harsh leaf, but very large, which becomes an huge *Tree*, and is distinguished by the name of the *Witch-hazel* in our *Statute* Books, as serving formerly to make *long Bowes* of; but the *Timber* is not so good as the *first* more vulgar; but the *Bark* at time of year, will serve to make a course *bast-rope* with.

6. Of all the *Trees* which grow in our *Woods*, there is none which does better suffer the *Transplantation* than the *Elm*; for you may remove a *Tree* of *twenty years* growth with undoubted success: It is an Experiment I have made in a *Tree* almost as big more as my waste; but then you must totally *disbranch* him, leaving only the *Summit* intire; and being careful to take him up with as much *Earth* as you can, refresh him with abundance of *water*. This is an excellent, and expeditious way for great Persons to plant the *Accesses* of their Houses with; for being disposed at sixteen, or eighteen foot *interval*, they will in a few years bear goodly heads, and thrive to admiration. Some that are very cautious, *emplaster* the wounded head of such over-grown *Elms* with a mixture of *clay* and *horse-dung*, bound about them with a wisp of *Hay* or fine *Moss*, and I do not reprove it, provided they take care



care to temper it well, so as the *Vermine* nestle not in it. But for more ordinary plantations, younger Trees, which have their *bark* smooth and tender, clear of *Wens* and *Tuberous* bunches (for those of that sort seldom come to be stately Trees) about the scantling of your leg, and their heads trimm'd at five or six foot height, are to be preferr'd before all other. *Cato* would have none of these sorts of *Trees* to be removed till they are five or six fingers in *diameter*; others think they cannot take them too young; but experience (the best *Mistress*) tells us, that you can hardly plant an *Elm* too big. There are who pare away the *Root* within two fingers of the *stem*, and quite cut off the *Head*; but I cannot commend this extream severity, no more than I do the strewing of *Oats* in the pit; which *fermenting* with the moisture, and frequent *waterings*, is believed much to *accelerate* the putting forth of the *Roots*; not considering, that for want of *air* they corrupt, and grow musty, which more frequently suffocates the *Roots*, and endangers the whole *Tree*.

7. I have affirmed how patient this *Tree* is of *Transplantation*; not only for that I observe so few of them to grow wild in *England*, and where it may not be suspected, but they, or their predecessors have been planted by some industrious hand; but for that those incomparable *Walks*, and *Vistas* of them both at *Aranuez*, *Casa del Campo*, *Madrid*, the *Escorial*, and other places of delight belonging to the *King*, and *Grandees* of *Spain*, are planted with such as they report *Philip the Second* caused to be brought out of *England*; before which (as that most Honourable Person the Earl of *Sandwich*, lately his Majesties Ambassador Extraordinary at that *Court* writ to me) it does not appear there were any of those *Trees* in all *Spain*. In that Princely Seat it is, that double rows of them are planted in many places for a *league* together in length, and some of them *fourty yards* high, which are kept stript up to the very top branch, which must needs render a most glorious, and agreeable effect; no *Tree* whatsoever, becoming long *Walks* and *Avenues*, comparably to this Majestick plant: But hear it as sweetly advised as described;

An *Elm* for graceful verdure, bushy bough,  
A lofty top, and a firm rind allow.  
Plant *Elm* in borders, on the *Grass*-plots list,  
Branches of *Elm* into thick *Arbours* twist;  
A Gallery of *Elm* draw to the end  
That Eyes can reach, or a breath'd race extend.

Ut viror est ulmo latus, ramique comantes,  
Arduus, alta petens & levi cortice truncus.  
Ulmum adhibe ordinibus, quoties fundenda per hortum,  
Sunt serie: spatia ingenti, texendaque totis,  
Assivos contra soles umbracula campis:  
Una alias inter texendis aptior ulmus  
Marginibus spatiorum, exornandoque viroto.  
Seque adeo series, plano super aequore, tendat  
Ulmorum tractu longo; quantum ipsa tuentum  
Luminas vel gressus valeant lustrare sequentum.

Rapinus.

8. The *Elm* delights in a *sound*, *sweet*, and *fertile* Land, something more inclined to Loamy moisture, and where good pasture is produced; though it will also prosper in the gravelly, provided there be a competent depth of *mould*, and be refreshed with Springs; in defect of which, being planted on the very surface of the ground (the *swarth* par'd first away, and the earth stirred a foot

F

deep

deep or more) they will undoubtedly succeed; but in this *trial*, let the *Roots* be handsomely spread, and covered a *foot*, or more in height, and above all, firmly staked. This is practicable also for other *Trees*, where the Soil is over moist, or unkind: For as the *Elm* does not thrive in too *dry*, *sandy*, or *hot* grounds, no more will it abide the *cold* and *spongy*; but in places that are competently fertile, or a little elevated from these annoyances; as we see in the *Mounds*, and casting up of *Ditches*, upon whose banks the *Female* sort does more naturally delight; though it seems to be so much more addicted to *some* places than to others, that I have frequently doubted, whether it be a pure *Indigene* or *translatitions*; and not only because I have hardly ever known any considerable *Woods* of them (besides some few *Nurseries* near *Cambridge*, planted I suppose for store) but almost continually in *Tufts*, *Hedg-rows*, and *Mounds*; and that *Shropshire*, and several other Counties, have rarely, any growing in many miles together.

9. The *Elm* is by reason of its aspiring, and tapering growth (unless it be topped to enlarge the *Branches*, and make them spread low) the least offensive to *Corn* and *Pasture grounds*, to both which, and the *Cattel*, they afford a benign *shade*, *defence*, and agreeable *Ornament*.

10. It would be planted as *shallow* as might be; for, as we noted, deep *interring* of *Roots* is amongst the *Catholick* mistakes; and of *this*, the greatest to which *Trees* are obnoxious. Let new planted *Elms* be kept moist by frequent refreshings upon some half-rotten *Fern*, or *Littier* laid about the foot of the *stem*; the earth a little stirred and depressed for the better reception, and retention of the *Water*.

11. Lastly, your Plantation must above all things, be carefully preserved from *Cattel*, and the concussions of impetuous *Winds*, till they are out of reach of the *one*, and sturdy enough to encounter the *other*.

12. When you *lop* the side-boughs of an *Elm* (which may be about *January* for the *Fire*, and more frequently, if you desire to have them *tall*; or that you would form them into *Hedges* (for so they may be kept *plashed*, and thickned to the highest twig; affording both a magnificent, and august defence against the *Winds* and *Sun*) I say, when you trim them, be careful to indulge the *tops*; for they protect the *body* of your *Trees* from the *wet*, which always invades those parts first, and will in time *perish* them to the very heart; so as *Elms* beginning thus to decay, are not long prosperous. Sir *Hugh Plat* relates (as from an expert *Carpenter*) that the boughs and branches of an *Elm* should be left a foot long next the *trunk* when they are *lop'd*; but this is to my certain observation, a very great mistake either in the *Relator*, or *Author*; for I have noted many *Elms* so disbranched, that the remaining *stubs* grew immediatly *hollow*, and were as so many *Conduits* or *Pipes*, to hold, and convey the *Rain* to the very *body* and *heart* of the *Tree*.

13. There

13. There is a *Cloyster* of the right *French Elm* in the little *Gasden* near to her *Majesties* the *Queen Mothers* Chapel at *Somerset-house*, which were (I suppose) planted *there*, by the industry of the *F. F. Capuchines*; that will perfectly direct you to the incomparable use of this noble *Tree* for *shade* and *delight*, into whatever *figure* you will accustom them. I have my self procured some of them from *Paris*; but they were so abused in the Transportation, that they all perished save *one*, which now flourishes with me: I have also lately grafted *Elms* to a great improvement of their heads: *Virgil* tells us they will joyn in Marriage with the *Oak*, and they would both be tryed; and that with the more probable success, for such *lignous* kinds, if you graft under the Earth, upon, or near the very *Root* it self, which is likely to entertain the *Cyon* better than when more exposed, till it be well fixt; and have made some considerable progress.

14. When you would *Fell*, let the *Sap* be perfectly in repose; as 'tis commonly about *November* or *December*, after the *frost* hath well nipp'd them: I have already alledged my reason for it; and I am told, that both *Oak* and *Elm* so cut, the very *Saplings* (whereof *Rasfers*, *Spars*, &c. are made) will continue as long as the very *heart* of the *Tree*, without decay. In this work, cut your *kerse* near to the ground; but have a care that it suffer not in the *fall*, and be ruined with its own weight: This depends upon your *Wood-mans* judgment in *disbranching*, and is a necessary caution to the *Felling* of all other *Timber-trees*. If any begin to *doat*, pick out such for the *Axe*, and rather trust to its *Successor*.

15. *Elm*, is a *Timber* of most singular use; especially where it may lie continually *dry*, or *wet*, in extreams; therefore proper for *Water-works*, *Mills*, the *Ladles*, and *Soles* of the *Wheel*, *Pipes*, *Pumps*, *Aque-ducs*, *Pales*, *Ship-planks* beneath the *Water-line*; and some that has been found buried in *Bogs* has turned like the most polish'd, and hardest *Ebony*, only discerned by the grain: Also for *Wheel-wrights*, *Handles* for the *single Hand-saw*, the knotty for *Naves*, *Hubs*, the straight and smooth for *Axle-trees*, and the very *Roots* for curiously dappled works, scarce has any superior for *Kerbs* of *Coppers*, *Featheridge*, and *Weather-boards*, (but it does not without difficulty, admit the *nail* without *boring*) *Chopping-blocks*, *Blocks* for the *Hat-maker*, *Trunks*, and *Boxes* to be covered with *leather*; *Coffins*, for *Dressers*, and *Shovelboard-Tables* of great length, and a lustrous *Colour* if rightly seasoned; also for the *Carver*, by reason of the tenor of the *grain*, and toughness which fits it for all those curious works of *Frontages*, *Foleage*, *Shields*, *Statues*, and most of the *Ornaments* appertaining to the *Orders* of *Architecture*, and for not being much subject to warping; I find that of old they used it even for *hinges* and *books* of *Doors*; but then, that part of the *Plank*, which grew towards the top of the *Tree*, was in work to be always reversed; and for that it is not so subject to rift, *Vitruvius* commends it both for *Tenons* and *Mortaises*: But besides these;



and sundry other employments, it makes also the second sort of *Charcoal*; and finally (which I must not omit) the use of the very *leaves* of this *Tree*, especially of the *female*, is not to be despis'd; for being suffered to dry in the *Sun* upon the *Branches*, and the *spray* strip'd off about the *decrease* in *August* (as also where the *suckers* and *stolones* are super-numerary, and hinder the thriving of their *Nurses*) they will prove a great relief to *Cattel* in *Winter*, and scorching *Summers*, when *Hay* and *fodder* is dear; they will eat them before *Oates*, and thrive exceedingly well with them; remember only to lay your *Boughs* up in some dry, and sweet corner of your *Barn*: It was for this the *Poet* prais'd them, and the *Epithete* was advis'd,

Fruitful in leaves the Elm.

—*secunda frondibus Ulmi.*

Georg. 2.

In some parts of *Herefordshire* they gather them in *Sacks* for their *Swine*, and other *Cattel* according to this Husbandry. But I hear an ill report of them for *Bees*, that surfeiting of the blooming *Seeds*, they are obnoxious to the *Lark*, at their first going abroad in *Spring*, which endangers whole *Stocks*, if *Remedies* be not timely adhibited; therefore 'tis said in great *Elm* Countries they do not thrive, but the truth of which I am yet to learn. The *Green* leaf of the *Elms* contused, heals a *green wound* or *Cut*, and boyled with the *Bark* consolidates fractur'd bones. All the parts of this *Tree* are *abstersive*, and therefore sovereign for the consolidating *wounds*; and assuage the pains of the *Gout*: But the *Bark* decocted in common water to almost the Consistence of a *Syrup*, adding a third part of *Aqua Vite*, is a most admirable Remedy for the *Ischiadica* or *Hip-pain*, the place being well rub'd and chaf'd by the fire.

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CHAP.

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## C H A P. V.

## Of the Beech.

I. **T**HE Beech, [*Fagus*] (of two or three kinds) and num- *Beech.*  
 bred amongst the glandiferous Trees, -I rank here before  
 the martial *Ash*, because it commonly grows to a greater stature.  
 But here I may not omit a Note of the accurate Critic *Palmerius*, *Exercit. in*  
 upon a passage in *Theophrastus*, where he *Animadvertit* upon his *Theophrast. l. 3.*  
*Interpreter*, and shews that the ancient *κρυς* was by no means the *c. 9.*  
*Beech*, but a kind of *Oak*; for that the figure of the fruit is so  
 widely unlike it; that being round, *this* triangular; and both *The-*  
*ophrastus* and *Pausanias* make it indeed a Species of *Oak*, wholly *In Arcad.*  
 differing in *Trunk*, as well as *Fruit* and *Leaf*, to which he adds  
 (what determines the Controversie) *ξύλον τὸ κρυς ἰσχυρότερον ὁ δένδρ-*  
*σαλον, &c.* That it is of a firmer Timber, not obnoxious to the  
*Worm*, neither of which can so confidently be said of the *Beech*.  
 Yet *La Cerda* too seems guilty of the same mistake: But leaving  
 this, there are of our *Fagi*, two or three kinds with us; the  
 Mountain (where it most affects to grow) which is the whitest, and  
 most sought after by the *Turners*; and the *Campestral* or wild, which  
 is of a blacker colour, and more durable. They are both to be  
 rais'd from the *Mast*, and govern'd like the *Oak* (of which amply)  
 and that is absolutely the best way of furnishing a *Wood*: unless  
 you will make a *Nursery*, and then you are to treat the *Mast* as  
 you are instructed in the *Chapter* of *Ashes*, sowing them in *Autumn*,  
 or later, even after *January* or rather nearer the *Spring*, to preserve  
 them from *Vermis* which are very great devourers of them. But  
 they are likewise to be planted of young seedlings, to be drawn  
 out of the places where the fruitful Trees abound. In transplanting  
 them cut off only the boughs and bruised parts, two Inches from  
 the stem, to within a yard of the top; but be very sparing of the  
 Root: This, for such as are of pretty stature. They make spread-  
 ing Trees, and noble shades with their well furnished and glister-  
 ing leaves, being set at forty foot distance; but they grow taller,  
 and more upright in the Forests, where I have beheld them at eight  
 and ten foot, shoot into very long Poles; but neither so apt for  
 Timber, nor Fuel: In the Vallies (where they stand warm and in  
 Consorts) they will grow to a stupendious procerity, though the  
 soil be stony and very barren: Also upon the declivities, sides,  
 and tops of high Hills, and Chalkie Mountains especially; for  
 they will strangely insinuate their roots into the bowels of those  
 seemingly impenetrable places, not much unlike the *Fir* it self,  
 which, with this so common Tree, the great *Cæsar* denies to be  
 found in *Britanny*, *Materia cujusque generis, ut in Gallia, præ-*  
*ter Fagum & Abietem*: But certainly from a grand mistake, or  
 rather,

rather, for that he had not travelled much up into the Countrey. *Virgil* reports it will graff with the *Chesnut*.

2. The *Beech* serves for various Uses of the Housewife;

Hence in the Worlds best years the humble *Shed*,  
Was happily, and fully furnished:

*Beech* made their *Chifts*, their *Beds* and the *Joyn'd*-  
*Beech* made the *Board*, the *Platters*, and the *Bowles*.

*Hinc olim juvenis Mundi melioribus annis,*  
*(Stools, Fortunatarum domuum non magna Supellex*

*Tota petebatur; Sellas, Armaria, Lectos,*

*Et Menfas dabat, & Lances, & Pocula Fagus, &c.*

*Couleij Pl. l. 6.*

with it the *Turner* makes *Dishes*, *Trays*, *Rimbs* for *Buckets*, and other *Utenfils*, *trenchers*, *Dresser-boards*, &c. likewise for the *Wheel-er*, *Joyner*, for large *Screws*, and *Upholster* for *Sellyes*, *Chairs*, *Stools*, *Bedsteads*, &c. for the *Bellows-maker*, and *Husbandman* his *Shovel* and *Spade-graffs*; *Floates* for *Fishers Nets* instead of *Corks*, is made of its *Bark*; for *Fuel*, *Billet*, *Bavin* and *Coal* though one of the least lasting: Not to omit even the very *Shavings* for the fining of *Wines*. *Peter Crescentius* writes, that the *Ashes* of *Beech* with proper mixture, is excellent to make *Glass* with. If the *Timber* lie altogether under *water*, 'tis little inferior to *Elm*, as I find it practised, and asserted by *Shipwrights*: Of old they made their *Vasa Vin-demiatoria* and *Corbes Messoriae* (as we our pots for *Strawberries*) with the *Rind* of this *Beech*, nay, and *Vessels* to preserve *Wine* in, and that curiously wrought *Cup* which the *Shepherd* in the *Bucbolicks* wagers withal, was engraven by *Alcimedon* upon the *Bark* of this *tree*: And an happy age it seems:

— No Wars did men molest,  
When only Beechen-Bowles were in request.

— nec bella fuerunt,  
*Faginus* astat dum *Scyphus* ante dapes.

*Tibul.*

Of the thin *Lamina*, or *Scale* of this wood (as our *Cutlers* call it) are made *Scabards* for *Swords*, and *Band-boxes*, superinduc'd with thin *leather* or *Paper*, *Boxes* for *writings*, *Hat-cases*, and formerly *Book covers*. I wonder we cannot *split* it our selves, but send into other *Countries* for such trifles. In the *Cavities* of these *Trees*, *Bees* much delight to *Hide* themselves: Yet for all this, you would not wonder to hear me deplore the so frequent use of this *Wood*, if you did consider that the industry of *France* furnishes that Country for all domestick *Utenfils* with excellent *Walnut*; a material infinitely preferable to the best *Beech*, which is indeed good only for *shade* and for *fire*, as being brittle, and exceedingly obnoxious to the *Worm*, where it lies either *dry*, or *wet* and *dry*, as has been noted; but being put ten days in *water*, it will exceedingly resist the *worm*. *Ricciolus* much commends it for *Oars*, and some say that the vast *Argo* was built of the *Fagus*, a good part of it at least, as we learn out of *Apollonius*; this will admit of Interpretation; the *Fagus* yet by *Claudian* is mentioned with the *Alder*,

*Sic qui vecturus longinqua per aquora merces*  
*Molitur tellure ratem, vitamque procellis*  
*Obiectare parat, Fagos metitur, & Alnos,*  
*Et varium rudibus sylvis accommodat usum, &c.*

But



But whilst we thus condemn the *Timber*, we must not omit to praise the *Mast*, which feeds our *Swine* and *Deer*, and hath in some Families even supported men with bread: *Chios* indured a memorable Siege by the benefit of this *Mast*; and in some parts of *France* they now grind the *Buck* in *Mills*: It affords a sweet *Oyl*, which the poor People eat most willingly: But there is yet another benefit which this Tree presents us; that its very *leaves* (which make a natural, and most agreeable *Canopy* all the Summer) being gathered about the Fall, and somewhat before they are much *frost-bitten*, afford the best, and easiest *Mattresses* in the world to lay under our *Quilts* instead of *straw*; because, besides their tenderness and loose lying together, they continue sweet for seven or eight years long; before which time *straw* becomes *musty* and hard; they are thus used by divers persons of quality in *Dauphine*; and in *Switzerland* I have sometimes lain on them to my great refreshment; so as of this Tree it may properly be said,

The Wood's an House; the leaves a Bed.

—*Sylva domus, cubilia frondes.*

Juvenal.

Being pruin'd it heals the *Scar* immediately, and is not apt to put forth so soon again as other Trees.

The stagnant water in the hollow Trees cures the most obstinate *Tetters*, *Scabs*, and *Scurfs*, in Man or Beast, fomenting the part with it; and the *Leaves* chew'd, are wholesome for the *Gums* and *Teeth*, for which the very *Buds*, as they are in Winter hardned and dried upon the twigs, make good *Tooth-pickers*, *Swine* may be driven to *Mast* about the end of *August*.

## CHAP.

## C H A P. VI.

## Of the Ash.

Ash.

1. **F***Raxinus* the Ash, is with us reputed *Male* and *Female*, the one affecting the higher grounds: The other the plains, of a whiter wood, and rising many times to a prodigious stature; so as in forty years from the *Key*, an Ash hath been sold for thirty pounds *sterling*: And I have been credibly inform'd, that one Person hath planted so much of this one sort of *Timber* in his life time, as hath been valued worth *fifty thousand pounds* to be bought. These are pretty encouragements, for a small, and pleasant industry. That there is a *lower*, and more knotty sort, every *Husbandman* can distinguish.

2. The *Keys* being gathered from a young thriving tree when they begin to fall (which is about the end of *October*, and the ensuing Month) are to be laid to dry, and then sowed any time betwixt that and *Christmas*; but not altogether so deep as your former *Masts*: Thus they do in *Spain*, from whence it were good to procure some of the *keyes* from their best trees: A very narrow *Seminary* will be sufficient to store a whole *Country*: They will lie a full year in the ground before they appear; therefore you must carefully *Fence* them all that time and have patience: But if you would make a considerable *Wood* of them at once, *Dig*, or *Plow* a parcel of ground, as you would prepare it for *Corn*, and with the *Corn*, especially *Oates*, (or what other *Grain* you think fittest) sow also good store of *Keys*, some *Crab-kernels*, &c. amongst them: Take off your Crop of *Corn*, or Seed in its *Season*, and the next year following, it will be cover'd with young *Ashes*, which will be fit either to *stand* (which I prefer) or be *transplanted* for divers years after; and these you will find to be far better than any you can gather out of the *Woods* (especially *Suckers*, which are worth nothing) being removed at one foot stature (the sooner the better) provided you defend them well from *Cattel*, which are exceedingly licorish after their tops: The reason of this hasty *transplanting*, is to prevent their obstinate, and deep rooting; *tantus amor terræ* — which makes them hard to be taken up when they grow older, and that being removed, they take no great hold till the second year, after which, they come away again: Yet I have planted them offive and six inches *diametre*, which have thriven as well as the smaller *wands*. You may accelerate their springing by laying the *Keys* in *Sand*, and some moist fine earth S.S.S. but lay them not too thick, or double, and in a cover'd, though *airie* place for a *Winter*, before you sow them; and the second year they will come away mainly; so you trim and cleanse them. Cut not his *head* at all (which being young is pithy) nor, by any means, the fibrous part of the *Roots*; only, that down-right, or *Tap-root* (which

(which gives our *Husbandmen* so much trouble in drawing) is to be totally abated: But this work ought to be in the increafe of *October*, or *November*, and not in the *Spring*. We are (as I told you) willing to spare his head rather than the side branches (which whilst young may be cut close) because being yet young, it is but of a *spongie* substance; but being once well fixed, you may cut him as close to the earth as you please; it will cause him to shoot prodigiously; so as in a few years to be fit for *Pike-staves*; whereas if you take him *wild* out of the *Forest*, you must of necessity strike off the head, which much impairs it. Young *Asbes* are sometimes in *Winter* frost-burnt, black as *Coals*, and then to use the *knife* is seasonable, though they do commonly recover of themselves slowly. In *South Spain* (whereas we said are the best) after the first dressing, they let them grow till they are so big, as being cleft into four parts, each part is sufficient to make a *Pike-staff*: I am told there is a *Flemish Asb* planted by the *Dutchmen* in *Lincolnshire*, which in six years grows to be worth *twenty shillings* the Tree; but I am not assur'd whether it be the *Asb* or *Abeele*; either of them were, upon this account, a worthy encouragement, if at least the *latter* can be thought to bear that price, which I much question: From these low Cuttings come our *Ground-Asbes*, so much sought after for *Arbours*, *Espaliers*, and other *Pole-works*: They will spring in abundance, and may be reduced to one for a *Standard tree*, or for *Timber*, if you design it; for thus *Hydra* like, a *Ground-cut-Asb*,

By havock, Wounds and Blows,  
More lively and luxuriant grows.

Per damna, per cedes, ab ipso  
Ducit opes animamque ferro.

Hor.

*Asb* will be propagated from a *Bough* split off with some of the *old wood*, a little before the *Bud* swells, but with difficulty by *layers*. Such as they reserve for *Spears* in *Spain*, they keep shrip'd up close to the *stem*, and plant them in close order, and moister places. These they cut above the *knot* (for the least *nodosity* spoils all) in the decrease of *January*, which were of the latest for us: It is reported that the *Asb* will not only receive its own kind, but *graff*, or be *inoculated* with the *Pear* and *Apple*, but to what improvement I know not.

3. It is by no means convenient to plant *Asb* in *Plow-lands*; for the *Roots* will be obnoxious to the *Coulter*; and the *shade* of the Tree is malignant to *Corn* when the head and branches over-drip and emaciate it; but in *Hedge-rows*, and *Plumps*, they will thrive exceedingly, where they may be dispos'd at nine or ten foot distance, and sometimes nearer: But in planting of a whole *Wood* of several kinds of Trees for *Timber*, every *third* set at least, would be an *Asb*. The best *Asb* delights in the best Land (which it will soon impoverish) yet grows in any; so it be not over stiff, wet, and approaching to the *Marshy*, unless it be first well drain'd: By the Banks of sweet, and crystal *Rivers* and *Streams*, I have observ'd them to thrive infinitely. One may observe as manifest a difference in the *Timber* of *Asbes*, as of the *Oak*; much more than is

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found



found in any one kind of *Elm*, *ceteris paribus*: For so the *ground-Ash* (like the *Oak*) much excells a bough, or branch of the same bulk, for strength and toughness; and in yet farther emulation of the *Oak*, it has been known to prove as good, and lasting *Timber* for *Building*, nay, prefer'd before it, where there has been plenty of *Oak*; vast difference there is also in the strength of *Ground*, and *quarter'd Ash*: 'Tis likewise remarkable that the *Ash*, like the *Cork-tree*, grows when the *Bark* is as it were quite peel'd off, as has been observ'd in several *Forests*, where the *Deer* have bared them as far as they could climb: Some *Ash* is curiously *can-leted* and vein'd, I say, so differently from other *Timber*, that our skilful *Cabinet-makers* prize it equal with *Ebony*, and give it the name of *green Ebony*, which the *Customer* pays well for; and when our *Woodmen* light upon it, they may make what money they will of it: But to bring it to that curious lustre, so as 'tis hardly to be distinguished from the most curiously diaper'd *Olive*, they *Varnish* their *Work* with the *China-varnish* (hereafter described) which infinitely excells *Linseed-oil*, that *Cardan* so commends, speaking of this *Root*. The truth is, the *Bruscum*, and *Moluscum* to be frequently found in this *Wood*, is nothing inferior to that of *Maple* (of which hereafter) being altogether as exquisitely diaper'd, and wav'd like the *Gambes* of *Achates*; an eminent example of divers strange figures of *Fish*, *Men* and *Beasts*, *Dr. Plott* speaks of to be found in a *dining-Table* made of an old *Ash*, standing in a *Gentleman's* house some-where in *Oxford-shire*: Upon which is mention'd that of *Jacobus Gaffarelli* in his Book of *Unheard-of Curiosities*, namely, of a *Tree* found in *Holland*, which being cleft, had in the several *slivers*, the figures of a *Chalice*, a *Priests Albe*, his *Stole*, and several other *Pontifical Vestments*: of this sort was the *Elm* growing at *Middle-Aston* in *Oxford-shire*, a block of which wood being cleft, there came out a piece so exactly resembling a *shoulder of Veal*, that it was worthy to be reckon'd among the *Curiosities* of this nature.

4. The use of *Ash* is (next to that of the *Oak* it self) one of the most universal: It serves the *Souldier* ——— *Fraxinus utilis hastis*, *Ovid*. the *Carpenter*, *Wheel-wrights*, *Cart-wright*, for *Ploughs*, *Axle-trees*, *Wheelrings*, *Harrows*, *Bulls*, *Oares*, the best blocks for *Pullys*, and *Sheffs*, as *Seamen* name them; and, like the *Elm*, for the same property (of not being so apt to split and scale) excellent for *Tenons* and *Mortaises*: also for the *Cooper*, *Turner*, and *Thatcher*: Nothing like it for our *Garden Palisad-hedges*, *Hop-yards*, *Poles*, and *Spars*, *Handles*, *Stocks* for *Tools*, *Spade-trees*, &c. In sum, the *Husbandman* cannot be without the *Ash* for his *Carts*, *Ladders*, and other tackling, from the *Pike*, to the *Plow*, *Spear*, and *Bow*, for of *Ash* were they formerly made, and therefore reckon'd amongst those *woods*, which after long tension, has a natural *Spring*, and recovers its position; so as in *Peace*, and *War* it is a *Wood* in highest request: There is extracted an *Oyl* from the *Ash*, by the *process* on other *Woods*, which is excellent to recover the *Hearing*, some drops of it being distill'd warm into the

Ears,

*Ears*, and for the *Caries* or *rot* of the *Bones*, *Tooth-ach*, pains in the *Kidneys*, and *Spleen*, the anointing therewith is most sovereign. The *Chymists* exceedingly commend the seed of *Ash* to be an admirable Remedy for the *Stone*. The *Manna* of *Calabria* is found to exsude out of the leaves and boughs of this *Tree*, during the hot *Summer* months. Lastly, the *white*, and rotten *dottard* part composes a *ground* for our Gallants *Sweet-powder*, and the *Truncheons* make the third sort of the most durable *Coal*, and is (of all other) the sweetest of our *Forest-fueling*, and the fittest for *Ladies* Chambers, it will burn even whilst it is green, and may be reckoned amongst the *ἀκαπνα ξύλα*. To conclude, the very dead leaves afford (like those of the *Elm*) relief to our *Cattel* in *Winter*; and there is a *dwarfe* sort in *France* (if in truth it be not, as I suspect, our *Witchen-tree*) whose *Berries* feed the poor People, in *scarce* years, but it bears no *Keys*, like to ours, which being *pickled* tender, afford a delicate *Salading*. But the *shade* of the *Ash* is not to be endur'd, because it produces a noxious *Insect*; and for displaying themselves so very late, and falling very early, not to be planted for *Umbrage*, or *Ornament*; especially near the *Garden*, since (besides their *predatitious Roots*) the deciduous leaves dropping with so long a *Stalk*, are drawn by clusters into the *Worm* holes, which foul the *Allies* with their falling *Keys*, and suddenly infect the ground. Note, that the *Season* for *felling* of this *Tree* must be when the *Sap* is fully at rest; for if you cut it down too early, or over late in the year, it will be so obnoxious to the *Worm*, as greatly to prejudice the *timber*; therefore to be sure, *fell* not till the three *Mid-winter* Months, beginning about *November*: But in *Lopping* of *Pollards* (as of *soft Woods*) Mr. *Cook* advises it should be towards the *Spring*, and that you do not suffer the *Lops* to grow too great: Also, that so soon as a *Pollard* comes to be considerably *hollow* at the *head*, you suddenly cut it down, the *body* decaying more than the head is worth: the same he pronounces of taller *Ashes*, and where the *Wood-peckers* make holes (who constantly indicate their being faulty) to fell it in the *Winter*. I am astonish'd at the universal Confidence of all our *Botanists*, that a *Serpent* will rather creep into the *Fire*, than over a twig of *Ash*; this is an old *Imposture* of *Plinys*, who either took it up upon trust, or we mistake the *Tree*.

## C H A P. VII.

## Of the Chesnut.

*Chesnuts.* 1. **T**HE next is the *Chesnut*, [*Castanea*] of which *Pliny* reckons many kinds, especially about *Tarentum* and *Naples*; but we commend those of *Portugal* or *Bayone*, choosing the largest brown and most ponderous for fruit, such as *Pliny* calls *Coctiva*, but the lesser ones to raise for *Timber*. They are produc'd best by sowing; previous to which, let the *Nuts* be first spread to sweat, then cover them in sand; a Month being past, plunge them in *Water*, reject the *swimmers*; being dry'd, for thirty days more, sand them again, and to the *water-ordeal* as before. Being thus treated till the beginning of *Spring*, or in *November*, set them as you would do *Beans*; and as some practise it, drench'd for a *Night* or more, in new *Milk*: They should be put into the *holes* with the poynt upmost, as you plant *Tulips*; *Pliny* will tell you they come not up, unless four, or five be pil'd together in a hole; but that is false, if they be good, as you may presume all those to be which pass this *examination*; nor will any of them fail: But being come up they thrive best *unremoved*, making a great *stand* for at least two years, upon every *transplanting*; yet if needs you must alter their *station*, let it be done about *November*, and that into a light friable ground, or moist *Gravel*, however they will grow even in *Clay*, *Sand*, and all mixed Soils, upon exposed, and bleak places, and the pendent declivities of *Hills* to the *North*, in dry airy places, and sometimes near *Marshes* and *Waters*; but they affect no other *compost*, save what their own *leaves* afford them, and are more patient of *cold* than *heat*: As for their sowing in the *Nursery*, treat them as you are taught in the *Wall-Nut*.

2. If you desire to set them in *Winter*, or *Autumn*, I counsel you to interr them within their *Husks*, which being every way arm'd, are a good protection against the *Mouſe*, and a providential integument. *Pliny* l. 15. c. 23. from this natural Guard, concludes them to be excellent food, and doubtless *Cæſar* thought so, when he transported them from *Sardis* first into *Italy*, whence they were propagated into *France*, and thence among us; another encouragement to make such *Experiments* out of *foreign* Countries. Some sow them confusedly in the *Furrow* like the *Acorn*, and govern them as the *Oak*; but then would the ground be broken up 'twixt *November* and *February*; and when they spring, be cleansed at two foot asunder, after two years growth: Likewise may Copses of *Chesnuts* be wonderfully increased, and thickned, by laying the tender and young branches; but such as spring from the *Nuts* and *Marrons*, are best of all, and will thrive exceedingly, if (being let stand without removing) the ground be stirr'd, and loosened about their *Roots*, for two or three of the first years, and the



the superfluous wood prun'd away; and indeed for good Trees; they should be shrip'd up after the first years removal; they also shoot into gallant *Poles* from a felled *stem*: Thus will you have a *Copse* ready for a *felling*, within eight years, which (besides many other uses) will yield you incomparable *Poles* for any work of the *Garden*, *Vineyard*, or *Hopyard*, till the next *cutting*: And if the Tree like the ground, will in ten, or twelve years grow to a kind of *Timber*, and bear plentiful fruit.

3. I have seen many *Chestnut-trees* transplanted as big as my arm, their *heads* cut off at five and six foot height; but they came on at leisure: In such *Plantations*, and all others for *Avenues*, you may set them from *thirty*, to *ten* foot distance, though they will grow much nearer, and shoot into *Poles*, if (being tender) you cultivate them like the *Asb*, the nature of whose *shade* it resembles, since nothing affects much to grow under it: Some *Husbands* tell me, that the young *Chestnut-trees* should not be pruned or touched with any *knife* or *edge-tool*, for the first three or four years, but rather crop'd or broken off, which I leave to farther Experience.

4. The *Chestnut* being grafted in the *Walnut*, *Oak*, or *Beech* (I have been told) will come exceeding fair, and produce incomparable Fruit; for the *Walnut*, and *Chestnut* in each other, it is probable; but I have not as yet made a full attempt; they also speak of Inoculating *Cherries* in the *Chestnut*-stock for a *later fruit*. In the mean time, I wish we did more universally propagate the *Horse-Chestnut*, which being easily increas'd from layers, grows into a goodly *Standard*, and bears a most glorious flower, even in our cold Countrey: This Tree is now all the *mode* for the *Avenues* to their Countrey Palaces in *France*, as appears by the late *Superintendents* Plantation at *Vaux*. It was first brought from *Constantinople* to *Vienna*, thence into *Italy*, and so *France*; but to *Us* from the *Levant* more immediately, and flourishes so well, and grows so goodly a Tree in competent time, that by *this* alone, we might have ample encouragement to *Denizen* other *strangers* amongst us.

5. The *Chestnut* is (next the *Oak*) one of the most sought after by the *Carpenter* and *Joyner*: It hath formerly built a good part of our ancient Houses in the *City of London*, as does yet appear. I had once a very large *Barn* near the *City*, fram'd intirely of this *Timber*: And certainly they grew not far off; probably in some *Woods* near the *Town*: For in that description of *London* written by *Fitz-Stephens*, in the Reign of *Hen. 2.* he speaks of a very noble, and large *Forest* which grew on the *Boreal* part of it: *Proxime* (says he) *patet foresta ingens, saltus nemorosi ferarum, latebra cervorum, damarum, aprorum, & taurorum Sylvestrium, &c.* A very goodly thing it seems, and as well stor'd with all sorts of good *Timber*, as with *Venison* and all kind of *Chase*. The *Chestnut* affords the best *Stakes*, and *Poles* for *Palisades*, *Pedaments* for *Vine-props*, and *Hops*, as I said before: Also for *Mill-timber* and *Water-works*, or when it may lie buried; but if water touch

touch the *Roots* of the growing *Trees*, it spoils both *Fruit* and *Timber*: 'Tis likewise observed, that this *Tree* is so prevalent against *cold*, that where they stand, they defend other Plantations from the injuries of the severest *frosts*: I am sure being planted in *Hedge-rows*, & *circa agrorum itinera*, or for *Avenues* to our *Countrey-houses*, they are a magnificent, and royal Ornament. This *Timber* also does well for *Columns*, *Tables*, *Chests*, *Chairs*, *Stools*, *Bedsteads*; for *Tubs*, and *Wine-Cask*, which it preserves with the least tincture of the *wood* of any whatsoever: If the *Timber* be dip'd in *scalding Oyl*, and well *Pitch'd*, it becomes extremely durable; but otherwise I cannot celebrate the *Tree* for its sincerity, it being found that (contrary to the *Oak*) it will make a fair shew outwardly, when 'tis all decay'd, and rotten within; but this is in some sort recompenc'd, if it be true, that the *Beams* made of *Chestnut-tree* have this property, that being somewhat brittle, they give warning, and premonish the danger by a certain crackling which it makes: Formerly they made *Consultatory Staves* of this *Tree*; and the *Variegated Rods* which *Jacob* peel'd to lay in the *Troughs*, and impress a fancy in his *Father-in-law's* conceiving *Ewes*, were of this material. The *Coals* are excellent for the *Smith*, being soon kindled, and as soon extinguish'd; but the *Ashes* of *Chestnut-wood* are not convenient for to make a *Lee* with, because it is observ'd to stain the *Linnen*. As for the *Fruit*, 'tis better to beat it down from the *Tree*, some little time before they fall off themselves; thus, they will the better keep, or else you must smoke-dry them. But we give that fruit to our *Swine* in *England*, which is amongst the delicacies of *Princes* in other Countries; and being of the larger *Nut*, is a lusty, and masculine food for *Rusticks* at all times; and of better nourishment for *Husbandmen* than *Cole*, and *rusty Bacon*; yea, or *Beans* to boot, instead of which, they boyl them in *Italy* with their *Bacon*; and in *Virgil's* time, they ate them with *Milk* and *Cheese*. The best *Tables* in *France* and *Italy* make them a *Service*, eating them with *Salt*, in *Wine*, or juice of *Lemon* and *Sugar*; being first rosted in *Embers* on the *Chaplet*; and doubtless we might propagate their use, amongst our common people (as of old the *Βαλανοφάνοι*) being a food so cheap, and so lasting. In *Italy* they also boyl them in *Wine*, and then smoke them a little, these they call *Anseri* or *Geese*, I know not why: Those of *Piemont* add *Fennel*, *Cinamon* and *Nutmeg* to their *Wine*, but first they peel them. Others macerate them in *Rose-water*. The *Bread* of the *Flower* is exceeding nutritive; 'tis a robust food, and makes *Women* well complexion'd, as I have read in a good Author: They also make *Fritters* of *Chestnut-flower*, which they wet with *Rose-water*, and sprinkle with grated *Parmegiano*, and so fry them in fresh *Butter*, a delicate: How we here use them in stew'd-meats, and *Beauville-Pyes*, our *French-Cooks* teach us; and this is in truth the very best use of their *Fruit*, and very commendable; for it is found that the eating of them raw, or in *Bread* (as they do much about *Limosin*) is apt to swell the belly, though without any other inconvenience that I can learn, and yet some

some condemn them as dangerous for such as are subject to the *Gravel* in the *Kidnies*. The best way to preserve them, is to keep them in Earthen vessels in a cold place; some lay them in a *Snake-lest*, others, in dry *Barly-straw*, others, in *Sand*, &c. The leaves of the *Chestnut-tree* make very wholsom *Mattresses* to lye on, and they are good Litter for *Cattel*: But those *leasse beds*, for the crackling noise they make when one turns upon them, the *French* call *Lits de Parlement*: Lastly, the flower of *Chestnuts* made into an *Electuary* with *Honey*, is an approved *Remedy* against spitting blood, and the *Cough*; and a decoction of the *Rind* of the Tree, tinctures hair of a golden Colour, esteem'd a beauty in some countries.

## C H A P. VIII.

*Of the Walnut.*

1. *Uglans, quasi Jovis glans*, the *Wall-or Welch-nut* (though *Walnut*. no where growing of it self, some say, in *Europe*) is of several sorts; the *soft-shell*, and the *hard*, the *whiter*, and the *black-er grain*: This *black* bears the worst *Nut*, but the *Timber* much to be preferred, and we might propagate more of them if we were careful to procure them out of *Virginia*, where they abound and bear a squarer *Nut*, of all other the most beautiful, and best worth planting; Indeed, had we store of these, we should soon despise the rest; yet those of *Grenoble* come in the next place, and are much priz'd by our *Cabinet-makers*: In all events, be sure to plant from young and thriving Trees, bearing full and plump *Kernels*. It is said that the *Walnut* kernel wrap'd in its own leaf, being carefully taken out of its shell, brings a *Nut* without shell, but this is a trifle; the best way to elevate them is, to set them as you do the *Chestnut*, being planted of the *Nut*, or set at the distance you would have him stand; for which they may be prepared by beating them off the Tree (as was prescribed of the *Chestnut*) some dayes before they quit the Branches of themselves, and kept in their *bushs*, or without them, till *spring*, or by bedding them (being dry) in *sand*, or good Earth, till *March* or earlier, from the time they fell, or were beaten off the Tree: Or if before, they be set with *bush* and all upon them; for the extream bitterness thereof is most exitial, and deadly to *Worms*; or it were good to strew some *Furzes* (broken or chopp'd small) under the ground amongst them, to preserve them from *Mice* and *Rats*, when their shells begin to wax tender; especially if, as some, you supple them a little in warm *Cows-milk*; but being treated as before, you will find them already *sprouted*, and have need only to be planted where they are to abide; because (as we said long since) they are most impatient



impatient of *transplanting* : But if there be an absolute necessity of *removing*, let your *Tree* never be above *four* years old, and then by no means touch the *head* with your *Knife*, nor cut away so much as the very *Tap-root*, being so old, if you can well dispose of it, since being of a pithy, and hollow substance, the least diminution, or bruise, will greatly endanger the killing : But see here what we have said of the *Chestnut* ; I have been told, that the very *Tops*, and palish *Buds* of this *Tree*, when it first sprouts, though as late as *April*, will take hold of the ground, and grow to an incredible improvement ; but first they steep them in *Milk* and *Saffron* ; but this attempt did not succeed with us, yet it will be propagated by a *Branch* slipp'd off with some of the *old wood*, and set in *February* : An industrious, and very experienc'd *Husbandman* told me, that if they be *transplanted* as big as ones *Middle*, it may be done safer than when younger ; I do only report it : What they hint of putting a *Tile-shard* under the *Nuts* when first set, to divaricate and spread the *Roots* (which are otherwise apt to penetrate very deep) I like well enough ; 'tis certain they will receive their own *Cyons* being *Grafted*, and that it does improve their *Fruit* : The best *compost* is the strewing of *Ashes* at the foot of the *Trees*, the *Salt* whereof being washed into the *Earth*, is the best dressing, whilst the juice of the fallen *leaves*, though it kill the *Worm*, is noxious to the *Root*. This *Tree* does not refuse to thrive even among others, and in great *Woods*, provided you strip up the collateral arms.

2. The *Walnut* delights in a dry, sound, and rich land ; especially if it incline to a feeding *Chalk*, or *Marle* ; and where it may be protected from the cold (though it affect cold rather than extreme heat) as in great *Pits*, *Vallies* and *Highway* sides ; also in *Stony*-grounds, if *loamy*, and on *Hills*, especially *Chalk* : likewise in *Cornfields* : Thus *Burgundy* abounds with them, where they stand in the midst of goodly *Wheat-lands*, at sixty, and an hundred foot distance ; and it is so far from hurting the *crop*, that they look on them as a great Preserver, by keeping the grounds warm ; nor do the roots hinder the *Plow*. When ever they fell a *Tree* (which is only the old, and decayed) they always plant a young one near him ; and in several places twixt *Hanaw*, and *Francfort* in *Germany*, no young *Farmer* whatsoever is permitted to *Marry* a *Wife*, till he bring proof that he hath planted, and is a Father of such a stated number of *Walnut-trees*, as the Law is inviolably observed to this day, for the extraordinary benefit which this *Tree* affords the *Inhabitants* : And in truth, were this *Timber* in greater plenty amongst us, we should have far better *Utensils* of all sorts for our *Houses*, as *Chairs*, *Stools*, *Bedsteads*, *Tables*, *Wainscot*, *Cabinets*, &c. instead of the more vulgar *Beech*, subject to the *worm*, weak, and unsightly ; but which to counterfeit, and deceive the unwary, they wash over with a decoction made of the *Green husks* of *Walnuts*, &c. I say, had we store of this material, especially of the *Virginian*, we should find an incredible improvement.

provement in the more stable *Furniture* of our Houses, as in the first *frugal*, and better days of *Rome*, when

Tables made here at home, those times beheld,  
Of our own Wood, for that same purpose fell'd,  
Old *walnut* blown down, when the Wind set East.

*illa domi natae, nostraque ex arbore mensas  
Tempora viderunt: hoc lignum stabat in usus,  
Annosam si forte nucem deiecerat Eurus.*

Sr. R. Stapilton.

Juv. l. 4. Sat. 11.

for if it had been *cut* in that season, it would not have prov'd so sound, as we shew in our *Chapter of Felling*. It is certain, that the *Mensa nucinae*, were once in price even before the *Citrin*, as *Strabo* notes; and nothing can be more beautiful, than some *Planks*, and Works which I have beheld of it, especially that which comes from *Grenoble*, of all other the most beautiful and esteemed.

3. They render most graceful *Avenues* to our Country dwellings, and do excellently near *Hedge-rows*; but had need be planted at forty, or fifty foot interval, for they affect to spread both their Roots and Branches. The *Bergstrás* (which extends from *Heidelberg* to *Darmstadt*) is all planted with *Walnuts*; for so by another antient Law, the *Bordurers* were obliged to nurse-up, and take care of them; and that chiefly, for their ornament and shade; so as a man may ride for many miles about that Countrey, under a continued *Arbour*, or *Close-walk*; the *Traveller* both refresh'd with the *Fruit*, and the *shade*, which some have *causelessly* defam'd for its ill effects on the *head*, for which the *Fruit* is a *specificque* and a notable *signature*; although I deny not, but the scent of the fallen leaves, when they begin to be *damp'd* with lying, may emit somewhat a *heady steam*, which to some has prov'd noxious; but not whilst they were fresh, and lively upon the Trees. How would such publick *Plantations* improve the Glory, and Wealth of a Nation! but where shall we find the *Spirits* among our Countrymen? Yes, I will adventure to instance in those *Plantations* of Sir *Richard Stidolph*, upon the *Downs* near *Lether-head* in *Surry*; Sir *Robert Clayton* at *Morden* near *Godstone* (once belonging to Sir *John Evelyn*) and so about *Cassanlon*, where many thousands of these *Trees* do celebrate the *industry* of the *Owners*, and will certainly reward it with infinite *improvement*, as I am assur'd they do in part already, and that very considerably; besides the *Ornament* which they afford to those pleasant *tracts*, for some *Miles* in circumference. I remember *Monsieur Sorbriere*, in a *Sceptical* discourse to *Monsieur de Martel*, speaking of the readiness of the People in *Holland* to furnish, and maintain whatsoever may conduce to the publick *Ornament*, as well as convenience; tells us, that their *Plantations* of these and the like *Trees*, even in their very *Roads*, and common *Highways*, are better preserv'd, and entertain'd (as I my self have likewise been often an eye-witness) than those about the *Houses*, and *Gardens of pleasure* belonging to the *Nobles* and *Gentry* of most other *Countries*: And in effect it is a most ravishing object, to behold their amenities in this particular: With us says he (speaking of *France*) they make a jest at such political *Ordinances*, by ruining these publick and useful *Ornaments*, if haply some more prudent *Magistrate*, do at any time introduce them.

them. Thus in the Reign of *Henry the fourth*, during the *Superintendency* of *Monsieur de Sully*, there was a resolution of adorning all the *High-ways* of *France* with *Elms*, &c. but the rude, and mischievous *Paysans*, did so hack, steal, and destroy what they had begun, that they were forced to desist from the thorough prosecution of the design; so as there is nothing more expos'd, wild, and less pleasant than the *Common Roads* of *France* for want of shade, and the decent *limits* which these sweet, and divertissant *Plantations* would have afforded; not to omit that *Political* use, as my *Lord Bacon* hints it, where he speaks of the *Statues*, and *Monuments* of brave men, and such as had well deserv'd of the *Publick*, erected by the *Romans* even in their *High-ways*, since doubtless, such noble, and agreeable objects, would exceedingly divert, entertain, and take off the *Minds*, and *Discourses* of *Melancholy* people, and pensive *Travellers*, who having nothing but the dull, and enclosed Ways to cast their eyes on, are but ill *Conversation* to themselves, and others, and instead of Celebrating, Censure their Superiours. It is by a curious *Person*, and industrious *Friend* of mine, observ'd, that the *Sap* of this Tree rises, and descends with the *Sun's* diurnal course (which it visibly slackens in the *Night*) and more plentifully at the *Root* on the *South-side*, though those on the *North* were larger, and less distant from the Body of the Tree; and not only distill'd from the ends, which were next the *Stem*, but from those which were cut off and separated, which was never observed to happen in the *Birch*, or other *Sap-yielding Trees*.

4. What universal use the *French* make of the *Timber* of this *sole* Tree, for domestic affairs, may be seen in every Room both of Poor and Rich: It is of singular account with the *Joyner*, for the best grain'd, and colour'd *Wainscot*; with the *Gunsmith* for *Stocks*, for *Coach-wheels* excellent, and the Bodies of *Coaches*, (they make *hoops*, and *Bows* with it in *New-England*, for want of *Tew*;) the *Drum-maker* uses it for *Rimbs*, the *Cabinet-maker* for *Inlayings*, especially the firm, and close *Timber* about the *Roots*, which is admirable for *fleck'd* and *chambletted* works, some wood especially, as that which we have from *Bologne* and *New-England*, very black of Colour, and so admirably streaked, as to represent natural *flowers*, *Landskips*, and other *Fancys*: To render this the better coloured, *Joyners* put the boards into an *Oven* after the *batch is forth*, or lay them in a warm *Stable*, and when they work it, polish it over with its own *Oyl* very hot, which makes it look black and sleek, and the older it is, the more esteemable; but then it should not be put in work till thoroughly seasoned, because it will shrink beyond expectation. It is only not good to confide in it much for *beams*, or *Joysts*, because of its brittleness, of which yet, it has been observed to give timely notice, by the crackling before it breaks. Besides the uses of the *Wood*, the *fruit* with *husk* and all when tender and very young, is for *preserves*, for *food*, and *Oyl*, of extraordinary use with the *Painter*, in *whites*, and other delicate *Colours*, also for *Gold-size*, and *Vernish*; and with this



this they polish *Walking-staves*, and other works which are wrought in with burning: For *Food* they Fry with it in some places, and use it to burn in *Lamps*; the younger *Timber* is held to make the better coloured work (and so the *Oak*) but the older more firm and close, is finer *Chambleted* for Ornament; and the very *husks* and *leaves* being macerated in warm Water, and that Liquor poured on the *Carpet of Walks*, and *Bowling-greens*, does infallibly kill the *Worms*, without endangering the grass; not to mention the *Dye* which is made of this *Lixive*, to Colour *Wooll*, *Woods*, and *Hair*, as of old they us'd it. The water of the *Husks* is sovereign against all pestilential infections, and that of the *leaves* to *mundifie*, and heal inveterate *Ulcers*. That which is produc'd of the *thick-shell*, becomes best *Timber*, that of the *thinner* better *Fruit*. *Columella* has sundry excellent Rules how to ascertain, and accelerate the *growth* of this *Tree*, and to improve its *qualities*; and I am assur'd, that having been *Grafted* on the *Ash* (though others say no *Infition* improves it) they thrive exceedingly, become handsome *Trees*, and what is most estimable, bears its *fruit* within *four* years, all which I recommend to the farther Industrious. The green *husk* dry'd, or the first peeping red *Buds* and *leaves* reduc'd to powder, serves in stead of *Pepper*; to condite *meats* and *saucers*. 'Tis better to cudgel off the *Fruit*, when dropping ripe, than to gather it by hand; and that the *husk* may open, lay them by in a dry room, sometimes turning them with a broom, but without washing, for fear of *mouldiness*. In *Italy* they arm the tops of long *Poles* with *nails* and *Iron* for the purpose, and believe the *beating* improves the *Tree*: Those *Nuts* which come not easily out of their *husks*, should be laid to mellow in heaps, and the rest expos'd in the *sun*, till the *Shells* dry, else they will be apt to perish the *Kernel*: Some again preserve them in their own *leaves*, or in a *Chest* made of *Walnut-tree* wood; others in *Sand*, especially, if you will preserve them for a *Seminary*: do this in *October*, and keep them a little moist, that they may *spear*, to be set early in *February*: Thus after two years they may be remov'd at a *yard* afunder, cutting the *tap-root*, and *side branches*, but sparing its *head*; and being two yards high, *bud*, or remove them immediately. Old *Nuts* are not wholesome till macerated in warm, and almost boiling water; but if you lay them in a *Leaden* pot, and bury them in the *Earth*, so as no *Vermine* can attack them, they will keep marvellously plump the whole year about, and may easily be *blanched*: In *Spain* they use to strew the gratings of old, and hard *Nuts* (first peel'd) into their *Tarts* and other *Meats*. For the *Oyl*, one *Bushel* of *Nuts* will yield *fifteen pounds* of peel'd and clear *Kernels*, and that half as much *Oyl*, which the sooner 'tis drawn, is the more in *quantity*, though the dryer the *Nut*, the better in *quality*; the *Lees*, or *Marc* of the *Pressing*, is excellent to fatten *Hogs* with. After the *Nuts* are beaten down, the *leaves* would be sweep'd into heaps, and carried away, because their extreme Bitterness impairs the ground, and as I am assured, prejudices the *Trees*: The Green *husks* boyled, make a good Colour to dye a

dark *Yellow*, without any mixture; and the distillation of its *leaves* with *Hony* and *Urine*, makes *Hair* spring on *bald-heads*: Besides its *use* in the Famous *Salernitan Antidote*; if the *Kernel* a little masticated, be applied to the biting of a suspected *Mad-dog*, and when it has lain three hours, be cast to *Poultrey*, they will dye if they eat of it. In *Italy*, when a Country-man finds any pain in his *side*, he drinks a Pint of the fresh *Oyl* of this *Nut*, and finds immediate ease: The *juice* of the outward rind of the *Nut*, makes an excellent *gargle* for a *Sore-Throat*: The *Kernel* being rub'd upon any crack or *chink* of a Leaking or crasy *Vessel*, stops it better than either *Clay*, *Pitch*, or *Wax*: In *France* they eat them *blanch'd* and fresh, with *Wine* and *Salt*, having first cut them out of the *shells* before they are hardned, with a short broad *Brass-knife*, because *Iron* rusts, and these they call *Cernois*, from their manner of scooping them out.

## C H A P. IX.

### *Of the Mulberry.*

*Mulberry.* 1. **M**orus, the *Mulberry*: It may possibly be wonder'd by some, why we should insert this *Tree* amongst our *Forest* Inhabitants; but we shall soon reconcile our industrious *Planter*, when he comes to understand the incomparable benefit of it, and that for its *Timber*, durableness, and *use* for the *Joyner* and *Carpenter*, and to make *Hoops*, *Bows*, *Wheels*, and even *Ribs* for small *Vessels* in stead of *Oak*, &c. though the *Fruit* and the *leaves* had not the due value with us, which they deservedly enjoy in other places of the *World*.

2. But it is not here I would recommend our ordinary *black* fruit bearers, though that be likewise worth the propagation; but that *kind* which is call'd the *White Mulberry* (which I have had sent me out of *Languedoc*) one of them of a *broad leaf*, found there and in *Provence*, whose *Seeds* being procured from *Paris*, where they have it from *Avignon*, should be thus treated in the *Seminary*.

3. In Countries where they cultivate them for the *Silk-worm*, and other uses, they sow the perfectly mature *berries* of a *Tree*, whose *Leaves* have not been gather'd; these they shake down upon an old *Sheet*, spread under the *Tree*, to protect them from *Gravel* and *Ordure*, which will hinder you from discerning the *Seed*: If they be not *ripe*, lay them to mature upon *Shelves*, but by no means till they corrupt; to prevent which, turn them daily; then put them in a fine *Sieve*, and plunging it in *Water*, bruise them with your hand; do this in several *Waters*, then change them in other clear *Water*, and the *Seed* will sink to the bottom, whilst the *pulp* swims,

swims, and must be taken off carefully: This done, lay them to dry in the *Sun* upon a linnen Cloth, for which, one hour is sufficient, then ~~then~~ and lift it from the *bushs*, and reserve it till the season. This is the process of curious persons, but the sowing of ripe *Mulberries* themselves is altogether as good, and from the excrement of *Hogs*; and even *Dogs* (that will frequently eat them) they will rise abundantly: Note, that in sowing the *Berry* 'tis good to squash, and bruise them with fine sifted *Mould*, and if it berich, and of the *old bed*, so much the better: They would be interr'd, well moistned and cover'd with *straw*, and than rarely water'd till they peep; Or you may squeeze the ripe *Berries* in Ropes of *Hair* or *Bast*, and bury them as is prescrib'd for *Hippis* and *Haws*; the *Earth* in which you sow them, should be fine *Mould*, and as rich as for *Melons*, rais'd a little higher than the *Area*, as they make the *Beds* for ordinary *Pot-herbs*, to keep them loose and warm, and in such *beds* you may sow *Seeds* as you do *Purslane*, mingled with some fine *Earth*, and thinly cover'd, and then for a fortnight, strew'd over with *straw*, to protect them both from sudden heat, and from *birds*: The Season is *April* or *May*, though some forbear even till *July* and *August*, and in the second quarter of the *Moon*, the Weather calm and serene. At the beginning, keep them moderately fresh (not over wet) and clean weeded, secured from the rigor of *Frosts*; the second year of their growth about the beginning of *October*, or early *Spring*, draw them gently out, prune the *Roots*, and dipping them a little in *Pond-water*, transplant them in a warm place or *Nursery*; 'tis best ranging them in *Drills*, two foot large, and one in depth, each *drill* three foot distance, and each *Plant* two. And if thus the new *Earth* be somewhat lower than the Surface of the rest, 'twill the better receive the *Rain*: Being Planted, cut them all within three *Inches* of the ground. Water them not in *Winter*, but in extream necessity, and when the weather is warm, and then do it in the Morning. In this cold Season you shall do well to cover the ground with the Leaves of *Trees*, *Straw*, or short *Littier*, to keep them warm; and every year you shall give them three *Dressings* or half diggings; viz. in *April*, *June*, and *August*; this, for the first year, still after *Rain*: The second *Spring* after *Transplanting*, purge them of all superfluous *shoots* and *Scions*, reserving only the most towardly for the future *stem*; this to be done yearly, as long as they continue in the *Nursery*; and if of the principal *stem* so left, the frost mortifie any part, cut it off, and continue this government till they are near six foot high, after which suffer them to spread into *heads* by discreetly *pruning*, and fashioning them: But if you plant where *Cattel* may endanger them, the *stem* had need be taller, for they are extremely liquorish of the leaves.

4. When now they are about five years growth, you may transplant them without cutting the *Root* (provided you irradiate them with care) only trimming the *head* a little; the Season is from *September* to *November* in the *New Moon*, and if the *holes* or *pits* you set them in were dug, and prepar'd some months before, it would



would much secure their taking; some cast *horns, bones, shells, &c.* into them the better to loosen the earth about them, which should be rich, and well refresh'd all *Summer*. A light, and dry *Mould* is best, well expos'd to the *Sun* and *Air*, which above all things this *Tree* affects, and hates *watery* low grounds: In sum, they thrive best where *Vines* prosper most, whose society they exceedingly cherish; nor do they less delight to be amongst *Corn*, no way prejudicing it with its shade. The *Distance* of these *Standards* would be twenty, or twenty four foot every way, if you would design *Walks* or *Groves* of them; if the *Environs* of *Fields*, *Banks* of *Rivers*, *High-ways*, &c. twelve, or fourteen foot may suffice, but the farther distant, the better.

5. Another Expedient to increase *Mulberries* is, by *Layers* from the *Suckers* at the foot, this done in *Spring*, leaving not above two *Buds* out of the Earth, which you must diligently *water*, and the second year they will be rooted: They will also take by passing any branch or Arm slit, and kept a little open with a *wedge*, or stone, through a basket of *Earth*, which is a very sure way: Nay, the very *Cuttings* will strike in *Spring*, but let them be from *Shoots* of two years growth, with some of the old Wood, though of seven or eight years; these set in *Rills* like *Vines*, having two or three *Buds* at the top, will root infallibly, especially if you twist the old Wood a little, or at least back it, though some slit the foot, inserting a stone, or grain of an *Oate*, to suckle and entertain the Plant with moisture.

6. They may also be propagated by *Grafting* them on the black *Mulberry* in *Spring*, or *inoculated* in *July*, taking the *cyons* from some old tree, that has broad, even, and round leaves, which causes it to produce very ample, and tender leaves, of great emolument to the *Silk-master*.

7. Some experienc'd *Husbandmen* advise to poll our *Mulberries* every three, or four years, as we do our *Willows*: others not till 8 years: both erroneously. The best way is yearly to *prune* them of their dry, and superfluous branches, and to form their heads round and natural. The first year of *removal* where they are to abide, cut off all the *shoots* to five, or six of the most promising: the next year leave not above three of these, which dispose in *triangle* as near as may be, and then disturb them no more, unless it be to *purge* them (as we taught) of dead *Seare-wood*, and extravagant parts, which may impeach the rest; and if afterward any pruned branch shoot above three or four *Cyons*, reduce them to that number. One of the best ways of *Pruning* is, what they practise in *Sicily* and *Provence*, to make the head *hollow* and like a *bell*, by cleansing them of their inmost branches; and this may be done, either before they bud, viz. in the *New Moon of March*, or when they are full of leaves in *June* or *July*, if the season prove any thing fresh. Here I must not omit what I read of the *Chinese* culture, and which they now also imitate in *Virginia*, where they have found a way to raise these *Plants* of the *Seeds*, which they *mow* and cut like a crop of *Grass*, which sprout, and bear leaves again in a few months: They likewise (in *Virginia*) have planted them in *Hedges*, as near together

together as we do *Goose-berries* and *Currants*, for their more convenient *Clipping*, which they pretend to do with *scissers*.

8. The *Mulberry* is much improv'd by stirring the *Mould* at root, and *Letation*.

9. We have already mentioned some of the *Uses* of this excellent tree, especially of the *white*, so called because the *fruit* is of a paler colour, which is also of a more *luscious* taste, and lesser than the *black*; The *rind* likewise is *whiter*, and the *leaves* of a *mealy* clear *green* colour, and far tenderer, and sooner produc'd by at least a fortnight, which is a marvellous advantage to the newly disclos'd *Silk-worm*; Also they arrive sooner to their maturity, and the food produces a finer *web*. Nor is this tree less beautiful to the eye than the fairest *Elm*, very proper for *Walks* and *Avenues*: The *timber* (amongst other properties) will last in the *water* as well as the most solid *Oak*, and the *bark* makes good, and tough *Bast-ropes*. It suffers no kind of *Vermin* to breed on it, whether standing or fell'd, nor dares any *Caterpillar* attack it save the *Silk-worm* only. The *Loppings* are excellent *fuel*: But that for which this tree is in greatest, and most worthy esteem, is for the *Leaves*, which (besides the *Silk-worm*) nourishes *Cows*, *Sheep*, and other *cattel*; especially young *Porkers*, being boil'd with a little *bran*: and the *fruit* excellent to feed *Poultry*. In sum, what ever eats of them, will with difficulty be reduc'd to endure any thing else, as long as they can come by them; to say nothing of their other sovereign qualities, as *relaxing* of the *belly* being eaten in the morning, and curing *Inflammations* and *Ulcers* of the *mouth* and *throat*, mix'd with *Mel Rosarum*, in which *Receipt* they do best, being taken before they are over-ripe.

10. To proceed with the *Leaf* (for which they are chiefly cherish'd) the benefit of it is so great, that they are frequently *let to farm* for vast sums; so as some one *sole tree* has yielded the *proprietor* a rent of twenty *Shillings per Annum*, for the *Leaves* only; and six or seven pounds of *Silk*, worth as many pounds *Sterling*, in five or six weeks, to those who keep the *worms*. We know that till after *Italy* had made *Silk* above a *thousand* years, (and where the *Tree* it self was not a stranger, none of the *Antients* writing any-thing concerning it) they receiv'd it not in *France*; it being hardly yet an *hundred*, since they betook themselves to this *manufacture* in *Provence*, *Languedoc*, *Dauphine*, *Lionnois*, &c. and not in *Tourain*, and *Orleans* till *Hen. the Fourth's* time; but it is incredible what a *Revenue* it amounts to in that *Kingdom*. About the same time, or a little after, it was that *King James* did with extraordinary care recommend it to this *Nation*, by a *Book of Directions*, *Acts of Council*, and all other Princely assistance. But this did not take, no more than that of *Hen. the Fourth's* Proposal about the *Inviros of Paris*, who filled the *High-ways*, *Parks* and *Gardens* of *France* with the trees, beginning in his own *Gardens* for encouragement: Yet, I say, this would not be brought into example, till this present great *Monarch*, by the indefatigable diligence of *Monsieur Colbert* (*Superintendent of His Majesties manufactures*) who

who has so successfully reviv'd it, that 'tis prodigious to consider what an happy progress they have made in it; to our shame be it spoken, who have no other discouragements from any insuperable difficulty whatever, but our *sloth*, and want of *industry*; since where ever these *trees* will grow and prosper, the *Silk-worms* will do so also; and they were alike averse, and from the very same suggestions, where now that *manufacture* flourishes in our *neighbour Countries*. It is demonstrable, that *Mulberries* in four, or five years may be made to spread all over this *Land*; and when the indigent, and young *daughters* in proud Families are as willing to gain three or four Shillings a day for gathering *Silk*, and busying themselves in this sweet, and easie *employment*, as some do to get four pence a day for hard work at *Hemp*, *Flax*, and *Wool*; the reputation of *Mulberries* would spread in *England* and other *Plantations*. I might say something like this of *Saffron*, which we yet too much neglect the culture of; but, which for all this, I do not despair of seeing re-assum'd, when that good *Genius* returns. In order to this hopeful *Prognostick* we will add a few *Directions* about the gathering of their *Leaves*, to render this chapter one of the most accomplish'd, for certainly one of the most accomplish'd and agreeable *works* in the world.

II. The *Leaves* of the *Mulberry* should be collected from *trees* of seven or eight years old; if of such as are very young, it impairs their growth, neither are they so healthful for the *worms*, making them *hydropical* and apt to burst: As do also the *Leaves* of such *trees* as be planted in a too *waterish* or over-rich *soil*, or where no *Sun* comes, and all sick, and *yellow* leaves are hurtful. It is better to *clip*, and let the *leaves* fall upon a subtended *sheet* or *blanket*, than to gather them by hand; and to gather them, than to *strip* them, which marrs, and gauls the *branches*, and bruises the *leaves* that should hardly be touched. Some there are who lop off the *boughs*, and make it their *pruning*, and it is a tolerable way, so it be discreetly done in the over-thick parts of the *tree*; but these leaves gather'd from a separated branch will die, and wither much sooner than those which are taken from the *tree* immediately, unless you set the *stem* in water. *Leaves* gathered from *boughs* cut off, will shrink in three hours; whereas those you take from the living *tree*, will last as many days; and being thus a while kept, are better than over-fresh ones. It is a *Rule*, never to gather in a *rainy* season, nor cut any *branch* whilst the *wet* is upon it; and therefore against such suspected times, you are to provide before hand, and to reserve them in some *fresh*, but *dry* place: the same *caution* you must observe for the *dew*, though it do not rain, for *wet* food kills the *worms*. But if this cannot be altogether prevented, put the *leaves* between a pair of *sheets* well dried by the *fire*, and shake them up and down till the moisture be drunk up in the *Linen*, and then spreading them to the air a little, on another dry cloth, you may feed with them boldly. The top-leaves and oldest, would be gathered last of all, as being most proper to repast the *worms* with towards their last change. The *gatherer* must be neat, and have his hands



hands clean, and his *breath* sweet, and not poison'd with *Onions*, or *Tobacco*, and be careful not to press the *leaves*, by crouding them into the Bags or Baskets. Lastly, that they gather only (unless in case of necessity) leaves from the *present*, not from the *former* years sprigs, or old *wood*, which are not only rude and harsh, but are annex'd to stubb'd Stalks, which injure the *worms*, and spoil the denudated branches.

12. This is what I thought fit to premonish concerning the gathering of the *Leaves* of this tree for *Silk-worms*, as I newly find it in *Monsieur Isnard's Instructions*, in that exact *Discourse* of his published some three years since, and dedicated to *Monsieur Colbert*, (who has, it seems, constituted this industrious, and experienc'd person, *Surveyor* of this Princely *manufacture* about *Paris*) and because the *book* it self is *rare*, and known of by very few. I have no more to add, but *this* for our *encouragement*, and to encounter the *Objections* which may be suggested about the coldness, and moisture of our *Country*; That the *Spring* is in *Provence* no less *inconstant* than is ours in *England*; that the *colds* at *Paris* are altogether as *sharp*; and that when in *May* it has continued raining for *nine and twenty* days successively, *Monsieur Isnard* assures us, he proceeded in his *work* without the least disaster; and in the year 1664 he presented the *French King* his *Master*, with a considerable quantity of better *Silks*, than any *Messina*, or *Boulonia* could produce, which he sold raw at *Lions*, for a *Pistol* the pound; when that of *Avignon*, *Provence*, and *Dauphine* produc'd little above half that price. But you are to receive the compleat *History* of the *Silk-worm*, from that incomparable *Treatise*, which the learned *Malpighius* has lately sent out of *Italy*, and dedicated to the *Royal Society* as a *specimen*, and noble effect of its universal *correspondence*, and *concernments* for the improvement of *useful knowledge*. To this I add that beneficial passage of the learned *Dr. Beale*, communicated in the 12 Vol. *Philos. Transactions* N. 133. p. 816. where we find recommended the promotion of this *Tree* in *England*, from its success in several *Northern Counties*, and even in the moist places of *Ireland*; He shews how it may be improv'd by *Grafting* on the *Fig*: or the larger *black Mulberie*, on that of the *smallest* kind: Also of what request the *Diamorôn*, or *Guidenie* made of the *juice* of this *fruit*, was with the *Antients*, with other excellent observations.

## C H A P. X.

*Of the Service, and Black Cherry-tree.*

*Service.* 1. *Sorbus*, the *Service-tree* (of which there are four sorts) is rais'd of the *Chequers*, or *Berries*, which being ripe (that is) rotten, about September (and the pulp rub'd off clean from the stones, in dry sand, and so kept till after Christmas) may be sown like *Beech-Mast*, educated in the *Nursery* like the *Chestnut*: It is reported that the *Sower* never sees the fruit of his labour; either for that it bears only being very old, or that *Men* are commonly so, before they think of planting *Trees*: But this is an egregious mistake; for these come very soon to be *Trees*, and being planted young, thrive exceedingly; I have likewise planted them as big as my arm successfully: The best way is therefore to propagate them of *Suckers*, of which they put forth enough, as also of *Setts*, and may be budded with great improvement: They delight in reasonable good stiff ground, rather inclining to cold, than over hot; for in places which are too dry, they never bear kindly. The *Terminalis* is the kind most frequent with us; for those of the narrower, and less indented *Leaf*, is not so common in *England* as in *France*, bearing a sort of *Berry* of the *Pear* shape, and is there call'd the *Cornier*; this *Tree* may be *Grafted* either with it self, or on the *White-thorn*, and *Quince*. To this we might add, the *Mespilus*, or *Medlar*, being an hard wood, and of which I have seen very beautiful *Walking-staves*.

2. The *Timber* of the *forb* is useful for the *Joyner*, for the *Engraver* of *Wood-cuts*, *Bows*, *Pulleys*, *Screws*, *Mill-spindles* and other; *Goads* to drive *Oxen* with, &c. *Pistol*, and *Gun-stocks*, and for most that the *Wild-Pear-tree* serves; and being of a very delicate *Grain*, for the *Turner*, and divers *curiosities*, and looks delicately, and is almost everlasting, being rub'd over with *Oyl* of *Linseed*, well boyl'd, and may be made to counterfeit *Ebony*, or almost any *Indian Wood*, colour'd according to *Art*: Also it is taken to *Build* with, yielding *Beams* of considerable substance: The shade is beautiful for *Walks*, and the *Fruit* not unpleasant, especially the second kind, of which with new *Wine* and *Honey*, they make a *Conditum* of admirable effect to corroborate the *Stomach*; and the *Fruit* alone is good in *Dysenteria* and *Lasks*. The *water* distill'd from the *Stalks* of the *Flowers* and *Leaves* in *M. B.* and twice *Rectified* upon fresh matter, is incomparable for *Consumptive* and *Tabid* Bodies, taking an *Ounce* daily at several times: Likewise it cures the *Green-sickness* in *Virgins*, and is prevalent in all *Fluxes*; distill'd warm into the *Ears* it abates the pain: The *Wood* or *Bark* contus'd, and applied to any green *Wound*, heals it; and the *Powder* thereof drank in *Oyl Olive*, consolidates inward *Ruptures*: Lastly, the *Salt* of the *Wood* taken in decoction of *Althaa*

*thea* to three *Grains*, is an incomparable Remedy to break, and expel Gravel. The *Service* gives the *Husbandman* an early preface of the approaching *Spring*, by extending his adorned *Buds* for a peculiar entertainment, and dares peep out in the severest *Winters*.

3. That I rank this amongst the *Forest Berry-bearing trees*, is *Black-cherry* chiefly from the suffrage of that industrious Planter Mr. *Cooke*, from whose ingenuity and experience (as well as out of gratitude for his frequent mentioning of me in his elaborate, and useful work) I acknowledge to have benefited my self, and this *Edition*; though I have also given no obscure taste of this pretty tree in *Chap. 21. Sect. 22.*

It is rais'd of the *stones* of *Black-Cherries* very ripe (as they are in *July*) endeavouring to procure such as are full, and large; whereof some he tells us, are little inferiour to the *Black Orleance*, without *grafting*, and from the very *genius* of the Ground. These gather'd, the *fleshy* part is to be taken off, by rolling them under a *plank* in dry *sand*, and when the humidity is off (as it will be in 3 or 4 days) reserve them in *sand* again a little moist and hous'd, 'till the beginning of *February*, when you may sow them in a *light gravelly mould*, keeping them clean for two years, and thence planting them into your *Nurseries*, to raise other kinds upon, or for *Woods*, *Copp'ces* and *Hedge-rows*, and for *Walks* and *Avenues*, which if of a dryish *soil*, mixt with *loame*, though the bottom be *Gravel*, will thrive into stately trees, beautified with *blof-somes* of a surprizing whiteness, greatly relieving the sedulous *Bees*, and attracting *Birds*.

If you sow them in *Beds* immediately after they are *excarnated*, they will appear the following *Spring*, and then at two years shoot be fit to plant out where you please; otherwise, being kept too long e're you sow them, they will sleep two *Winters*: And this is a *rule*, which he prescribes for all sorts of *Stone-fruit*.

You may almost at any time remove young *Cherry-trees*, abating the *heads* to a single shoot.

He recommends it for the *Copp'ce*, as producing a strong *shoot*, and as apt to put forth from the roots, as the *Elm*; especially, if you fell lusty trees: In light ground it will increase to a goodly tall tree, of which he mentions *one*, that held above 85 *foot* in *height*: I have my self planted of them, and imparted to my Friends, which have thriv'd exceedingly; but till now did not insert it amongst the *Foresters*: Concerning its other *uses*, see the *Chapter* and *Section* above mentioned, to which add *Pomona*, *Chap. 8.* annexed with this Treatise.



## C H A P. XI.

## Of the Maple.

Maple.

1. **T**HE Maple [*Acer minus*] (of which Authors (see *Salmasius* upon *Solinus*, c. 33.) reckon very many kinds) was of old held in equal estimation almost with the *Citron*; especially the *Bruscum*, the *French-Maple*, and the *Peacocks-tail Maple*, which is that sort so elegantly *undulated*, and *crisped* into variety of *curls*. It were a most laudable attempt, if some would enquire out, and try the planting of such sorts as are not *Indigenes* amongst us; such as is especially the *German Aier*, and that of *Virginia*, not yet cultivated here, but an excellent Tree: And if this were extended to other *Timber*, and *exotic* Trees likewise, it would prove of extraordinary benefit and Ornament to the *Publick*, and were worthy even of the *Royal Care*. They are all produced of the *Keys*, like the *Ash*, (after a years interment) and like to it, affect a sound, and a dry mould; growing both in *Woods* and *Hedge-rows*, especially in the latter; which if rather hilly, than low, affords the fairest *Timber*. It is also propagated by *Layers*, and *Suckers*. By shredding up the boughs to a head, I have caused it to shoot to a wonderful height in a little time; but if you would lop it for the *fire*, let it be done in *January*; and indeed it is observ'd to be of noxious influence, to the subnascent plants of other kinds, by reason of a *clammy Dew* which it sheds upon them, and therefore they would not be indulg'd in *Pollards*, or spreading Trees, but to thicken *Under-woods* and *Copfes*. The *timber* is far superiour to *Beech* for all uses of the *Turner*, who seeks it for *Dishes*, *Cups*, *Trays*, *Trenchers*, &c. as the *Joyner* for *Tables*, *Inlayings*, and for the delicateness of the *grain*, when the *knurs*, and *nodosities* are rarely *diapred*, which does much advance its price. Also for the lightness (under the name *Aier*) imploy'd often by those who make *Musical Instruments*: There is a larger sort, which we call the *Sycamor*.

2. But the description of this lesser *Maple*, and the ancient value of it, is worth the citing. *Acer operum elegantia, & subtilitate Cedro secundum; plura ejus genera: Album, quod precipui candoris vocatur Gallicum: In Transpadana Italia, transque Alpes nascens. Alterum genus, crispo macularum discursu, qui cum excellentior fuit, à similitudine caudæ pavonum nomen accepit.* 'The *Maple* (says *Pliny*) for the elegance, and fineness of the wood, 'is next to the very *Cedar* it self: There are several kinds of it, 'especially the *White*, which is wonderfully beautiful; this is call'd 'the *French-Maple*, and grows on that part of *Italy*, that is on the 'other side of *Po* beyond the *Alpes*: The other has a *curl'd grain*, 'so curiously *maculated*, that from a near resemblance, it was usu-

ally

ally call'd the *Peacock-tail*, &c. He goes on to commend that of *Istria*, and that growing on the Mountains for the best: But in the next Chapter; *Pulcherrimum vero est Bruscum, multoque excellentius etiamnum Mollusculum, tuber utrumque arboris ejus. Bruscum intortius crispum, Mollusculum simplicius sparsum; Et si magnitudinem mensarum caperet, haud dubie praeferretur Cedro, nunc intra pugillares, leaeorumque filicios aut laminas, &c. et Brusco sunt mense nigrescentes, &c. Plin. l. 16. c. 15, 16.* 'The *Bruscum*, or *Knur* is wonderfully fair, but the *Molluscum* is counted most precious; both of them *Knobs* and swellings out of the *Tree*. The *Bruscum* is more intricately crisp'd; the *Molluscum* not so much; and had we *Trees* large enough to saw into *Planks* for *Tables*, 'twould be preferr'd before *Cedar* (or *Citron*, for so some Copies read it) but now they use it only for small *Table-books*, and with its thin *boards* to *Wainscot Bed-Testers* with, &c. The *Bruscum* is of a blackish kind, with which they make *Tables*. Thus far *Pliny*. And such Spotted *Tables* were the famous *Tigrin*, and *Pantherine* Curiosities of; not so call'd from being supported with figures carved like those *Beasts*, as some conceive, and was in use even in our *Grandfathers* days, but from its natural Spots and maculations, *hem, quantis facultatibus aestimavere ligneas maculas?* as *Tertullian* crys out, *de Pallio, c. 5.* such a *Table* was that of *Cicero's*, which cost him 10000. *Sesterces*; such another had *Asinius Gallus*. That of King *Juba* was sold for 15000. and another which I read of, valu'd at 140000 *H. S.* which at about 3 *d. Sterling*, arrives to a pretty Sum; and yet that of the *Mauritanian Ptolemy*, was far richer, containing four *Foot* and an half *diameter*, three *Inches* thick, which is reported to have been sold for its weight in *Gold*: Of that value they were, and so madly *luxurious* the age, that when they at any time reproach'd their *Wives* for their wanton *Expensiveness* in *Pearl* and other rich trifles, they were wont to retort, and turn the *Tables* upon their *Husbands*. The *Knot* of the *Timber* was the most esteem'd, and is said to be much resembled by the *Female Cypress*; we have now, I am almost perswaded, as beautiful *Planks* of some *Walnut-trees*, near the *Root*; and *Yew*, *Box*, *Rose-wood*, *Ash*, *Thorn*, and *Olive*, I have seen incomparable pieces; but the great Art was in the *Seasoning*, and *Politure*; for which last, the rubbing with a *Mans hand* who came warm out of the *Bath*, was accounted better than any *Cloth*, as *Pliny* reports. Some there be who contend, this *Citern* was a part near the *Root* of the *Cedar*, which, as they describe that, is very *Oriental* and *Odoriferous*, but most of the *Learned* favour the *Citern*, and that it grew not far from our *Tangier*, about the foot of *Mount Atlas*, whence haply some industrious Person might procure of it from the *Moors*; and I did not forget to put his then *Excellency* my Lord *H. Howard* (now his *Grace* the *Duke of Norfolk*) in mind of it, who I hoped might have opportunities of satisfying our *Curiosity*, that by comparing it with those elegant *Woods*, which both our own *Countries*, and the *Indies* furnish, we might pronounce something in the *Controversie*: But his not going so far

far into the *Country*, and disorder which happen'd at his being there, quite frustrated this expectation: Here I think good to add, what honest *Palissy* Philosophises after his plain manner, about the reason of those pretty *undulations* and *chamfers*, which we so frequently find in diverse *Woods*, which he takes to be the *descent*, as well as *ascent* of *Moisture*: For what else (says he) becomes of that *water* which we often encounter in the *Cavities*, when many branches *divaricate*, and spread themselves at the *tops* of great *Trees* (especially *Pollards*) unless (according to its natural appetite) it sink into the very Body of the *Stem* through the *Pores*? For example, in the *Walnut*, you shall find, when 'tis *old*, that the *Wood* is admirably figur'd, and as it were *marbl'd*, and therefore much more esteemed by the *Joyners*, *Cabinet-makers*, &c. than the *Young*, which is *paler* of *Colour*; and without any notable *Grain*, as they call it. For the *Rain* distilling along the *Branches*, when many of them break out into clusters from the *stem*, sinks in, and is the *Cause* of these *marks*; since we find it exceedingly full of *pores*: Do but plane off a thin *chip*, or *sliver* from one of these *old Trees*, and interposing it 'twixt your *Eye* and the *Light*, you shall observe it to be full of innumerable *holes* (*much more perspicuous and ample, by the application of a good Microscope.*) But above all, notable for these extravagant *Damaskings* and *Characters*, is the *Maple*; and 'tis notorious, that this *Tree* is very full of *Branches* from the *Root* to its very *Summit*, by reason that it produces no considerable *Fruit*: These *Arms* being frequently cut, the *Head* is more surcharged with them, which spreading like so many *Raies* from a *Center*, form that *hollowness* at the top of the *Stem* whence they shoot, capable of containing a good quantity of *Water* every time it *Rains*: This sinking into the *pores*, as was before hinted, is compell'd to divert its course as it passes through the Body of the *Tree*, where-ever it encounters the *knot* of any of those *Branches* which were cut off from the *stem*; because their *Roots* not only deeply penetrate towards the *heart*, but are likewise of themselves very *hard* and *impervious*; and the frequent *obliquity* of this *Course* of the subsiding *moisture*, by reason of these obstructions, is, as may be conceived, the cause of those curious *works*, which we find remarkable in *this*, and other *Woods*, whose *Branches* grow thick from the *Stem*: but for these curious *contextures*, consult rather the learned *Dr. Grew*. We have shewed how by *Culture*, and stripping up, it arrives to a goodly *Tree*; and surely, there were some of them of large bulk, and noble *Shades*, that *Virgil* should choose it for the *Court* of his *Evander*, one of his *Worthiest Princes*, in his best of *Poems*, sitting in his *Maple-Throne*; and when he brings *Aeneas* into the *Royal Cottage*, he makes him this memorable *Complement*; Greater, says great *Cowley*, than ever was yet spoken at the *Escorial*, the *Louvre*, or *Whitehal*.

This humble Roof, this Rustique Court, said he,  
Receiv'd Alcides crown'd with Victorie:  
Scorn not (great Guest) the steps where he has trod,  
But contemn *wealth*, and imitate a God.

—Hec (inquit) limina Victor  
Alcides —



## C H A P. XII.

## Of the Sycomor.

1. **T**HE Sycomor, falsely so called, is, our *Acer majus*, one of *Sycomor*. the Maples, and is much more in reputation for its shade than it deserves; for the Honey-dew leaves, which fall early (like those of the *Ash*) turn to Mucilage and noxious insects, and putrifie with the first moisture of the season; so as they contaminate and marr our Walks, and are therefore by my consent, to be banish'd from all curious Gardens and Avenues. 'Tis rais'd of the Keys (as soon as ripe) they come up the first Spring; also by Roots, and Layers, in ground moist, not over-wet or stiff, and to be govern'd, as other Nursery-Plants.

2. There is in Germany a better sort of Sycomor than ours, wherewith they make Saddle-trees, and divers other things of use; our own is excellent for Trenchers, Cart, and Plow-timber, being light, tough, and not much inferiour to *Ash* it self; and if the trees be very tall and handsome, are the more tolerable for distant Walks, especially, where other better trees prosper not so well, or where a sudden shade is expected: Some commend them to thicken Coppices, especially in Parks, as least apt to the spoil of Deer, and that it is good fire-wood. This Tree being wounded, bleeds a great part of the Year; and the Lignor emulating that of the Birch, which for hapning to few of the rest (that is, to bleed Winter and Summer) I therefore mention.

## C H A P. XIII.

## Of the Horn-beam.

1. **O**strys the Horn-beam, in Latine (ignorantly) the *Carpinus*, is Horn-planted of Sets; though it may likewise be raised from the beam. Seeds, which being mature in August, should be sown in October; and will lie a year in the bed, which must be well, and carefully shaded so soon as they peep: but the more expeditious way is by Layers or Sets, of about an inch diametre, and cut within half a foot of the earth: thus it will advance to a considerable Tree. The places it chiefly desires to grow in are in cold hills, stiff ground, and in the barren, and most expos'd parts of woods.

2. Amongst other uses which it serves for, as Mill-cogs, &c. (for which it excels either *Tew* or *Crab*) Tank-timber (whence of old,

old, and for that it was as well *flexible*, as *tough*, 'twas called *ζυγία*) Heads of *Beetles*, Stocks and Handles of *Tools*; It is likewise for the *Turners* use excellent: Good *Fire-wood*, where it burns like a *candle*, and was of old so employ'd;

*Carpinus tadas fissa facésque dabit.*

(For all which purposes its extream toughness and whiteness commends it to the *Husbandman*.) Being planted in small *Fosses* or *Trenches*, at half a foot *interval*, and in the single row, it makes the noblest, and the stateliest *Hedges* for long *Walks* in *Gardens*, or *Parks*, of any Tree whatsoever whose leaves are *deciduous*, and forsake their Branches in *Winter*; because it grows tall, and so sturdy, as not to be wronged by the *Winds*: Besides, it will furnish to the very foot of the *stem*, and flourishes with a glossie and polish'd *verdure* which is exceeding delightful, of long continuance, and of all other the harder Woods, the speediest Grower; maintaining a slender, upright *stem*, which does not come to be bare and sticky in many years; it has yet this (shall I call it) *infirmity*, that keeping on its *leaf* till new ones thrust them off, 'tis clad in *rufset* all the winter long. That admirable *Espalier-hedge* in the long middle walk of *Luxembourg Garden* at *Paris* (than which there is nothing more graceful) is planted of this Tree; and so is that *Cradle*, or *Close walk*, with that perplex *Canopy*, which covers the seat in his *Majesties Garden* at *Hampton-Court*. These *Hedges* are *tonfile*; but where they are maintain'd to fifteen, or twenty foot height (which is very frequent in the places before mention'd) they are to be cut, and kept in order with a *Sythe* of four foot long, and very little *falcated*; this is fix'd on a long *sweed* or streight handle, and does wonderfully expedite the trimming of these, and the like *Hedges*. Of all the *Foresters* this preserves it self best from the bruttings of *Deer*, and therefore to be kindly entertain'd in *Parks*: But the reason why with us, we rarely find them ample and spreading, is, that our *Husbandman* suffers too large and grown a *lop*, before he cuts them off, which leaves such gashly *wounds*, as often proves exitial to the Tree, or causes it to grow deform'd and hollow, and of little worth but for the fire; whereas, were they oftner taken off, when the *lops* were younger, though they did not furnish so great *Wood*, yet the continuance, and flourishing of the Tree, would more than recompence it; For this cause;

3. They very frequently plant a *Clump* of these *Trees* before the *Entries* of most of the great *Towns* in *Germany*, to which they apply *Timber-Frames* for convenience, and the *People* to sit, and solace in. *Scamozzi* the *Architect*, says, that in his time, he found one whose Branches extended seventy foot in breadth: This was at *Vuimfen* near the *Necker*, belonging to the Duke of *Witemberg*: But that which I find planted before the Gates of *Strasburgh*, is a *Platanus*, and a *Lime-tree* growing hard by one another, in which is erected a *Pergolo* eight foot from the ground, of fifty foot wide, having

having ten *Arches* of twelve foot height, all shaded with their foliage; and there is besides this, an *Over-grown Oak*, which has an *Arbour* in it of 60 foot diameter: hear we *Rapinus* describe the use of our *Horn-beam* for these, and other Elegancies.

In Walks the *Horn-beam* stands, or in a Maze  
Through thousand self-entangling Labyrinths strays:  
So clasp the Branches lopp'd on either side,  
As though an *Alley* did two walls divide:  
This Beauty found, Order did next adorn  
The Boughs into a thousand figures shorn,  
Which pleasing Objects weariness betray'd,  
Your feet into a *Wilderness* convey'd.  
Nor better Leaf on twining Arbor spread,  
Against the scorching Sun to shield your head.

In tractus longos facilis tibi *Carpinus* ibit,  
Mille per errores, indeprehensoque recessus,  
Et molles tendens scisso seu pariete ramos,  
Præbuit viridem diverso è margine scenam.  
Primus bonos illi quondam, post additus ordo est,  
Attonseque comæ, & formis quæsitæ voluptas  
Innumeris, furtoque viæ, obliquoque recessu:  
In tractus æta est longos & opaca vireta.  
Quinetiam egregiæ tendens umbracula frondis  
Temperat ardentis ramis ingentibus æstus.

## CHAP. XIV.

### Of the Lime-Tree.

**T**ilia the *Lime-tree*, or [*Linden*] is of two kinds; the *Male Lime-Tree* (which some allow to be but a finer sort of *Elm*) is harder, fuller of knots, and of a redder colour; but producing neither *Flower*, nor *Seed*, (so constantly and so mature with us) as does the *Female*, whose *Blossom* is also very odoriferous, perfuming the *Air*: The *Wood* is likewise thicker, of small pith, and not obnoxious to the *Worm*; so as it seems *Theophrastus*, de Pl. l. 3. c. 10. said true, that though they were of both Sexes, διαφέρειν δὲ τῇ ὑποφῇ τῇ ὁλῇ &c. yet they totally differ'd as to their form. We send commonly for this Tree into *Flanders* and *Holland*, to our excessive cost; while our own *Woods* do in some places spontaneously produce them, and though of somewhat a smaller leaf, yet altogether as good, apt to be civiliz'd, and made more florid. From thence I have received many of their *Berries*; so as it is a shameful negligence, that we are no better provided of *Nurseries*, of a Tree so choice, and universally acceptable. For so they may be rais'd either of the *Seeds* in *October*, or (with better success) by the *Suckers*, and *Plants*, which are treated after the same method, and in as great abundance as the *Elm*, like to which it should be cultivated. You may know whether the *Seeds* be prolific, by searching the *husk*, if biting, or cutting it in sunder it be full and white, and not husky, as sometimes we find the *Forrainers*: Be sure to collect your *Seeds* in dry weather, airing it in an open room, and reserving it in sand, (as has been taught) till mid *February*, when you may sow it in pretty strong, fresh and loamy mould, kept shaded, and moist as the season requires, and clear of *Weeds*, and at the period of two years, plant them out, dress'd and prun'd as discretion shall advise. But not only by the *Suckers* and *Layers*,



at the *Roots*, but even by *Branches* lop'd from the head, may this *Tree* be propagated; and peeling off a little of the *Bark*, at a competent distance from the *Stem* or *Arms*, and covering it with *Loam* mingled with rich *Earth*, they will shoot their *fibers*, and may be seasonably separated: But to facilitate *this* and the like attempts, it is advisable to apply a *ligature* above the place, when the *Sap* is *ascending*, or beneath it, when it (as they say vulgarly) *descends*. From *June* to *November* you may lay them; the *Scrubs* and less erect, do excellently to thicken *Copp'ces*, and will yield lusty shoots, and useful *fire-wood*.

2. The *Lime-tree* affects a rich feeding loamy Soil; in such Ground their growth will be most incredible for speed and spreading. They may be planted as big as ones Leg; their *Heads* topp'd at about six or eight foot *bole*; thus it will become (of all other) the most proper, and beautiful for *Walks*, as producing an upright *Body*, smooth and even *Bark*, ample *Leaf*, sweet *Blossom*, and a goodly *Shade* at distance of eighteen, or twenty foot. They are also very patient of *pruning*; but if it taper over much, some of the collateral bows would be spar'd, to check the *Sap*, which is best to be done about *Midsummer*; and to make it grow upright, take off the *prepondering* branches with discretion, and so you may correct any other *Tree*, and redress its obliquity.

The *Root* in transplanting would not be much lop'd; and this (says Mr. *Cook*) is a good lesson for all young planted *Trees*.

3. The *Prince Elector* did lately remove very great *Lime-trees* out of one of his *Forests*, to a steep Hill, exceedingly expos'd to the heat of the *Sun* at *Hidelboarg*; and that in the midst of *Summer*: They grow behind that strong *Tower* on the *South-west*, and most torrid part of the eminence; being of a dry, reddish barren *Earth*; yet do they prosper rarely well: But the *Heads* were cut off, and the *Pits* into which they were transplanted, were (by the industry, and direction of *Monsieur de Son*, a *Frenchman*, and admirable *Mechanican*, who himself related it to me) fill'd with a composition of *Earth* and *Cow-dung*, which was exceedingly beaten, and so diluted with *Water*, as it became almost a liquid *pap*: It was in *this*, that he plunged the *Roots*, covering the surface with the *Turf*: A singular example of removing so great *Trees* at such a *season*, and therefore by me taken notice of here expressly. Other perfections of the *Tree* (besides its unparallel'd beauty for *Walks*) are that it will grow in almost all grounds: That it lasts long; that it soon heals its *Scars*; that it affects *uprightness*; that it stoutly resists a *Storm*; that it seldom becomes hollow.

4. The *Timber* of a well grown *Lime* is convenient for any use that the *Willow* is; but much to be preferr'd, as being both stronger, and yet lighter; whence *Virgil* calls them *tilias leves*; and therefore fit for *Tokes*, and to be turn'd into *Boxes* for the *Apothegaries*; and *Columella* commends *Arculus tiliaceas*. And because of its *Colour*, and easie working, and that it is not subject to split, *Architects* make with it *Modells* for their designed *Buildings*;

ings; and small *Statues*, and little curious *Figures* have been Carved of this wood. With the *twigs*, they made *Baskets*, and *Cradles*, and of the smoother side of the *Bark*, *Tablets* for *Writing*; for the antient *Philyra* is but our *Tilia*. *Bellonius* says, that the *Grecians* made *Bottles* of it, which they finely *Rozin'd* within-side, so likewise for *Pumps* of *Ships*, also *Lattices* for *Windows*. The *Gravers* in *Wood* do sometimes make use of this fine material; and even the coarsest *membrane*, or *slivers* of the *Tree* growing 'twixt the *Bark* and the main *Body*, they now twist into *Bas-ropes*; Besides the *Truncheons* make a far better *Coal* for *Gun-powder* than that of *Alder* it self: And the extraordinary *candor* and *lightness*, has dignifi'd it above all the *Woods* of our *Forest*, in the hands of the Right Honourable the *White-stave* Officers of His *Majesties* Imperial Court. Those royal *Plantations* of these *Trees* in the *Parks* of *Hampton-Court*, and *St. James's*, will sufficiently instruct any man how these (and indeed all other *Trees* which stand single) are to be govern'd, and defended from the injuries of *Beasts*, and sometimes more *unreasonable* Creatures, till they are able to protect themselves. In *Holland* (where the very *High ways* are adorn'd with them) they frequently clap three, or four *Deal-boards* (in manner of a close trunk) about them; but it is not so well; because it keeps out the *Air*, which should have free access, and intercourse to the *bole*, and by no means be excluded from flowing freely about them, or indeed any other *Trees*; provided they are secur'd from *Cattel* and the violence of impetuous *winds*, &c. as his *Majesties* are, without those close *Coffins*, in which the *Dutch-men* seem rather to bury them alive. In the mean time, is there a more ravishing, or delightful object than to behold some intire *streets*, and whole *Towns* planted with these *Trees*, in even lines before their doors, so as they seem like *Citties* in a *Wood*? This is extremely fresh, of admirable effect against the *Epilepsie*, for which the delicately scented *blissoms* are held prevalent, and skreen the Houses both from *Winds*, *sun*, and *Dust*; than which there can be nothing more desirable where *Streets* are much frequented. For thus

The stately *Lime*, smooth, gentle, straight, and fair,  
(With which no other *Dryad* may compare)  
With verdant locks, and fragrant Blossoms deckt,  
Does a large, ev'n, odorate-Shade project.

*Stat Philyra*; haud omnes formosior altera surgit  
Inter Hamadryades; mollissima, candida, levis,  
Et viridante comâ, & benevolenti flore superba,  
Spargit odoratam latè, atque aequaliter umbram.

Coulei l. 6. Pl.

The distance for *Walks* may in rich ground, be eighteen foot, in more ordinary Soil, fifteen, or sixteen. For a most prodigious Tree of this kind, see *Chap. 30. Sect. 10.*

The *Berries* reduc'd to powder, cure the *Dysenterie*, and stop blood at the nose: The distill'd-water good against the *Epilepsie*, *Apoplexie*, *Vertigo*, trembling of the *Heart*, *Gravel*; *Schroder* commends a *mucilage* of the *bark* for wounds, *repellens urinam*, & *Menses ciens*, &c.

## C H A P. XV.

## Of the Quick-Beam.

Quick-  
beam.

1. **T**HE Quick-beam [*Ornus*, or as the *Pinax* more peculiarly, *Fraxinus bubula*, others, the *Wild Sorb*] or (as some term it) the *Witcher*, is a species of wild-*Ash*. The berries which it produces in *October*, may then be sown; or rather the *Seeds* planted: I have store of them in a warm *Grove* of mine, and 'tis of singular beauty: It rises to a reasonable stature, shoots upright, and slender; and consists of a fine smooth *bark*. It delights to be both in *Mountains* and *Woods*, and to fix it self in good light ground; *Virgil* affirms, 'twill unite with the *Pear*.

2. Besides the use of it for the *Husbandmans Tools*, *Goods*, &c. the *Wheelwright* commends it for being all *heart*; if the tree be large, and so well grown as some there are, it will *saw* into *Planks*, *Boards* and *Timber*, (*vide chap. 30. sect. 10.*) and our *Fletchers* commend it for *Bowes* next to *Tew*, which we ought not to pass over, for the glory of right *English* Ancestors: In a *Statute* of *Hen. 8.* you have it mention'd: It is excellent *Fuel*; but I have not yet observed any other use, save that the *Blossoms* are of an agreeable scent, and the *Berries* such a tempting Bait for the *Thrushes*, that as long as they last, you shall be sure of their Company: Some highly commend the *Juice* of the berries, which (fermenting of it self) if well preserv'd, makes an excellent Drink, against the *Spleen* and *Scorbute*: *Ale* and *Beer* brew'd with these *Berries*, being ripe, is an incomparable Drink, familiar in *Wales*, where this *Tree* is reputed so sacred, that as there is not a *Church-yard* without one of them planted in them (as among us the *Tew*) so on a certain day in the year, every body religiously wears a *Cross* made of the wood, and the *Tree* is by some *Authors* call'd *Fraxinus Cambro-Britannica*.

## C H A P. XVI.

## Of the Birch.

Birch.

1. **T**HE Birch [*Betula*, in *British* *Bedw*, doubtless a proper *Indigene* of *England*, though *Pliny* call it a *Gaulish* tree] is altogether produc'd of *Roots* or *Suckers*, (though it sheds a kind of *Samera* about the *Spring*) which being planted at four or five foot interval, in small *Twigs*, will suddenly rise to *Trees*; provided they affect the ground, which cannot well be too Barren; for it



it will thrive both in the Dry, and the Wet, Sand, and Stony, *Marshes*, and *Bogs*; the *Water-galls*, and *uliginous* parts of *Forests* that hardly bear any *Grass*, do many times spontaneously produce it in abundance, whether the place be high, or low, and nothing comes amiss to it. Plant the small *Twigs*, or *Suckers* having *Roots*, and after the first year, cut them within an *inch* of the surface; this will cause them to sprout in strong and lusty *tusts*, fit for *Coppice*, and *Spring-woods*; or, by reducing them to one *stem*, render them in a very few years, fit for the *Turner*. For

2. Though *Birch* be of all other the worst of *Timber*; yet has it its various uses, as for the *Husbandmans Ox-yokes*; also for *Hoops*, small *Screws*, *Paniers*, *Brooms*, *Wands*, *bavin-bands*, and *Wythes* for *Fagots*; and claims a memory for *Arrows*, *Bolts*, *Shafts*, our old *English Artillery*; also for *Dishes*, *Boules*, *Ladles*, and other domestic *Utenfils*, in the good old days of more simplicity, yet of better and truer *Hospitality*. In *New-England* our *Northern Americans* make *Canoos*, *Boxes*, *Buckets*, *Kettles*, *Dishes*, which they sow, and joyn very curiously with thread made of *Cedar roots*, and divers other domestical *Utenfils*, as *Baskets*, *Baggs* with this *Tree*, whereof they have a blacker kind; and out of a certain *Excrecence* from the *Bole*, a *Fungus*, which being boild, beaten and dry'd in an *Oven* makes excellent *Spunch* or *Touch-wood*, and *Balls* to play withal: They make also not only this *small ware*, but even *small-Craft Pinnaces* of *Birch*, ribbing them with white *Cedar*, and covering them with large flakes of *Birch bark*, sow them with thread of *Spruce-roots*, and pitch them, as it seems we did even here in *Britain*, as well as the *Veneti*, making use of the *Willow*, whereof *Lucan*,

When *Sicoris* to his own banks restor'd,  
Had quit the field, of *Twigs*, and *willow* board  
They build *small Crafts*, cover'd with *Bullocks hide*,  
In which they reach'd the *Rivers* farther side:  
So sail the *Veneti* if *Padus* flow,  
The *Britains* sail on their rough *Ocean* so.

Primum caue salix madefacto vimine, parvam  
Texitur in puppim, casoque induta juvenco,  
Vectoris patiens, tumidum super emicat annem.  
Sic Venetus flagrans Pado, susoque Britannus  
Navigat Oceano——

Also for *Fuel*, great and *small Coal*, which last is made by charring the slenderest *brush*, and *summities* of the *twigs*; as of the *Tops* and loppings *Mr. Howards* new *Tanne*. The inner *silken-bark* was anciently us'd for *Writing-Tables*, even before the *Invention* of *Paper*; and with the out-ward thicker, and courser part, are divers *Houses* in *Russia*, *Poland* and those poor *Northern Tracts* cover'd, in stead of *Slates* and *Tyle*: 'Tis affirm'd by *Cardan*, that some *Birch-roots* are so very extravagantly *Vein'd*, as to represent the *Shapes* and *Images* of *Beasts*, *Birds*, *Trees*, and many other pretty resemblances. Lastly, of the *whitest* part of the *old Wood*, found commonly in *doating Bircher*, is made the grounds of our *Farin'd Gallants* *sweet Powder*; and of the quite consum'd and *rooten* (such as we find reduc'd to a kind of *reddish Earth* in *superexammated* hollow-trees) is gotten the best *Mould* for the raising of divers *Seedlings* of the rarest *Plants* and *Flowers*; to say nothing here of the *Magisterial Fases*, for which antiently the *Cudgels* were us'd by the *Lictor*, as now the gentler *Rods* by our tyrannical *Pedagogues*.

See *Philos.*  
*Transact.* Vol.  
9. Num. 103.  
p. 93.

3. I should here add the *uses* of the *Water* too, had I full permission to tamper with all the *Medicinal* virtues of *Trees*: But if the sovereign effects of the *Juice* of this despicable *Tree* supply its other defects (which makes some judge it unworthy to be brought into the *Catalogue of Woods* to be propagated) I may perhaps for once, be permitted to play the *Empiric*, and to gratify our laborious *Wood-man* with a Draught of his own *Liquor*; And the rather, because these kind of *Secrets* are not yet sufficiently cultivated; and ingenious *Planters* would by all means be encourag'd to make more *trials* of this nature, as the *Indians*, and other *Nations* have done on their *Palmes*, and *Trees* of several kinds, to their great emolument. The *Mystery* is no more than this: About the beginning of *March* (when the *Buds* begin to be proud and turgid, and before they explain into *leaves*) with a *Chizel* and a *Mallet*, cut a *slit* almost as deep as the very *Pith*, under some *bough*, or branch of a well-spreading *Birch*; cut it *oblique*, and not *long-ways* (as a good *Chirurgion* would make his *orifice* in a *Vein*) inserting a small *stone* or *chip*, to keep the *Lips* of the wound a little open. Sir *Hugh Plat*, giving a general Rule for the gathering of *Sap*, and *Tapping* of *Trees*, would have it done within one foot of the ground, the first *rind* taken off, and then the white *Bark* slit overthwart, no farther than to the *Body* of the *Tree*: Moreover, that this wound be made only in that part of the *bark* which respects the *South-west*, or between those quarters; because (says he) little, or no *Sap* riseth from the *Northern*. In this *slit*, by the help of your *knife* to open it, he directs that a *leaf* of the *Tree* be inserted, first fitted to the dimensions of the *slit*, from which the *Sap* will distil in manner of *filtration*: Take away the *leaf*, and the *bark* will close again, a little *Earth* being clapped to the *slit*: Thus the *Knight* for any *Tree*: But we have already shew'd how the *Birch* is to be treated: Fasten therefore a *Bottle*, or some such convenient *Vessel* appendant: This does the effect as well as *perforation* or *tapping*: Out of this aperture will extil a *limpid* and clear *Water*, retaining an *obscure smack* both of the *tast* and *odor* of the *Tree*; and which (as I am credibly inform'd) will in the space of *twelve*, or *fourteen* days, *preponderate*, and *out-weigh* the whole *Tree* it self, *Body*, and *Roots*; which if it be constant, and so happen likewise in other *trees*, is not only stupendious, but an *experiment* worthy the Consideration of our profoundest *Philosophers*: *an ex sola aqua fiunt Arbores?* whether *Water* only be the *Principle* of *Vegetables*, and consequently of *trees*: I say, I am credibly inform'd; and therefore the late unhappy \* *angry-man* might have spar'd his *Animadversion*: For he that said but twenty *Gallons* run, does he know how many more might have been gotten out of larger apertures, at the insertion of every *branch*, and *foot* in the principal *Roots* during the whole season? But I conceive I have good *Authority* for my assertion, out of the *Author* cited in the *Margin*, whose words are these: *Si mense Martio perforaveris Betulam, &c. extillabit aqua limpidula, clara, & pura, obscurum Arboris saporem & odorem referens, quae spacio 12 aut 14 die-*

rum,

\* Dr. Stubb.

See the *Tractate*  
intitl'd *Adi-*  
*tus novus ad*  
*Occultas Sym-*  
*pathiae & Anti-*  
*pathiae causas*  
*inveniendas,*  
*per principia*  
*Philosophiae na-*  
*turalis, & Fer-*  
*mentorum arti-*  
*ficiosâ Anato-*  
*miâ hausta, pa-*  
*resfactas, à Syl-*  
*vestro Rattray,*  
*M. D. Glas-*  
*gowens, 1658.*  
P. 55.

*rum*, Præponderabit *Arbori cum Ramis & Radicibus, &c.* His exceptions about the beginning of *March* are very insignificant; since I undertake not *punctualitie* of time; and his own pretended experience shew'd him, that in *hard weather* it did not run till the *expiration* of the Month, or beginning of *April*; and another time, on the tenth of *February*, and usually he says, about the twenty fourth day, &c. at such *uncertainty*: what immense *difference* then is there between the twenty fourth of *Feb.* and commencement of *March*? Evident it is, that we know of no *Tree* which does more copiously attract, be it that so much celebrated *Spirit* of the *World* (as they call it) in Form of *Water* (as some) or a certain *specificque liquor* richly impregnated with this *Balsamical* property: That there is such a *Magnes* in this simple *Tree* as does manifestly draw to it self some *occult*, and wonderful *virtue*, is notorious; nor is it conceivable, indeed, the difference between the efficacy of that *Liquor* which distills from the *Bole*, or parts of the *Tree* nearer to the *Root* (where Sir *Hugh* would celebrate the *Inocision*) and that which weeps out from the more sublime *Branches*, more impregnated with this *Astral* *Vertue*, as not so near the *Root*, which seems to attract rather a cruder, and more common *water*, through fewer *strainers*, and neither so pure, and *Aerial* as in those refined *percolations*, the nature of the *Places* where these *Trees* delight to grow (for the most part lofty, dry, and barren) consider'd. But I refer these *Disquisitions* to the Learned; especially, as mention'd by that incomparable *Philosopher*, and my most noble Friend, the honourable Mr. *Boyle*, in his *Second* part of the usefulness of *Natural Philosophy* *Sec.* 1. *Essay* 3<sup>d</sup>. where he speaks of the *Manna del Corpo*, or *Trunk-Manna*, as well as of that *Liquor* from the *bough*; also of the *Sura* which the *Coco-trees* afford; and that *Polonian* secret of the *Liquor* of the *Walnut-tree* *Root*; with an encouragement of more frequent *Experiments* to educe *Saccharine* substances upon these occasions: But the *Book* being publish'd so long since this *Discourse* was first *Printed*, I take only here the liberty to refer the *Reader* to one of the best *Entertainments* in the world.

4. But whilst the *Second Edition* was under my hand, there came to me divers *Papers* upon this *Subject* experimentally made by a worthy *Friend* of mine, a *Learned* and most industrious Person, which I had here once resolv'd to have publish'd, according to the generous liberty granted me for so doing; but understanding he was still in pursuit of that *useful*, and curious *Secret*, I chang'd my resolution into an earnest address, that he would communicate it to the *World* himself, together with those other excellent *Enquires*, and observations which he is adorning for the benefit of *Planters*, and such as delight themselves in those innocent *Rusticities*. I will only by way of *Corollarie*, hint some particulars for satisfaction of the *Curious*; and especially that we may in some sort gratifie those earnest *suggestions*, and *Queries* of the late most obliging *Publisher* of the *Philosophical Transactions*, to whose *indefatigable pains* the *Learned World* has been infinitely engag'd.



engag'd. In compliance therefore to his *Querries*, Monday Octob. 19. 1668. Numb. 40 p. 797, 821, &c. these *Generals* are submitted: That in such *Trials* as my *Friend* essay'd, he has not yet encountered with any *Sap* but what is very clear and sweet; especially that of the *Sycomor*, which has a *dulcoration* as if mixed with *sugar*, and that it runs one of the earliest: That the *Maple* distill'd when quite rescind'd from the *Body*, and even whilst he yet held it in his hand: That the *Sycomor* ran at the *Root*, which some days before yielded no *Sap* from his *branches*; the *Experiment* made at the end of *March*: But the accurate knowledge of the nature of *Sap*, and its *periodic* Motions, and properties in several *Trees*, should be observed by some at entire *leisure* to attend it daily, and almost continually, and will require more than any one persons industry can afford: For it must be enquir'd concerning every *Tree*, its *age*, *soyl*, *situation*, &c. the variety of its ascending *Sap* depending on it; and then of its *Sap* ascending in the *branches*, and *Roots*; descending in cut *branches*; descending from *Root*, and not from *branches*; the *Seasons*, and difference of *time* in which those *Accidents* happen, &c. He likewise thinks the best expedient to procure store of *Liquor*, is, to cut the *Trees* almost quite through all the *Circles*, on both sides the *Pith*, leaving only the outmost *Circle*, and the *barks* on the *North*, or *North-East* side unpierced; and this *hole*, the larger it is bored, the more plentifully 'twill distill; which if it be *under*, and *through* a large *Arm*, near the *Ground*, it is effected with greatest advantage, and will need neither *stone*, nor *Chip* to keep it open, nor *Spigot* to direct it to the *Recipient*. Thus it will in a short time, afford *Liquor* sufficient to *Brew* with; and in some of these sweet *Saps*, one *Bushel* of *Mault*, will afford as good *Ale*, as *four* in ordina'y *Waters*, even in *March* it self; in others, as good as *two* *Bushels*; for *this*, preferring the *Sycomor* before any other: But to preserve it in best condition for *brewing*, till you are stored with a sufficient quantity, it is advis'd that what first runs, be *insolated* and placed in the *Sun*, till the remainder be prepar'd, to prevent its growing *sour*: But it may also be *fermented* alone, by such as have the *secret*: To the *Curious* these *Essays* are recommended: That it be immediately stopp'd up in the *bottles* in which it is gathered, the *Corks* well *wax'd*, and expos'd to the *Sun*, till (as was said) sufficient quantity be run; then let so much *Rye-bread* (toasted very dry, but not burnt) be put into it, as will serve to set it a *working*; and when it begins to *ferment*, take it out, and *Bottle* it immediately. If you add a few *Cloves*, &c. to steep in it, 'twill certainly keep the *year* about: 'Tis a wonder how speedily it extracts the *tast*, and *tincture* of the *Spice*: Mr. *Boyle* proposes a *sulphurous* fume to the *bottles*: *Spirit* of *Wine* may haply not only preserve, but advance the *Vertues* of *Saps*; and *Infusions* of *Raisins* are obvious, and without decoction best, which does but spend the more delicate parts. Note that the *Sap* of the *Birch*, will make excellent *Mead*.

5. To these *Observations*, that of the *Weight*, and *Vertue* of the several *Juices* would be both useful and *Curious*: As whether that

that which proceeds from the *bark*, or between *that* and the *Wood* be of the same nature, with that which is suppos'd to spring from the pores of the woody *Circles*? and whether it rise in like quantity upon comparing the *incisures*? All which may be try'd, first attempting through the *bark*, and saving that apart, and then *perforating* into the *Wood*, to the thickness of the *bark* or more; with a like separation of what *distills*. The period also of its *current* would be calculated; as how much proceeds from the *bark* in one *hour*, how much from the *Wood* or *Body* of the *Tree*, and thus every *hour*, still a deeper incision, with a good large *Augre*, till the *Tree* be quite perforated: Then by making a *second hole* within the *first*, fitted with a lesser pipe, the interior *heart-sap* may be drawn apart, and examin'd by *Weight*, *Quantity*, *Colour*, *Distillation*, &c. And if no difference perceptible be detected, the presumption will be greater, that the difference of *heart* and *Sap* in *Timber*, is not from the *Saps* plenty or penury, but the *Season*; and then possibly, the very *season* of *squaring*, as well as *Felling* of *Timber*, may be considerable to the preservation of it.

6. The notice likewise of the *Saps* rising more plentifully, and constantly in the *Sun*, than *Shade*; more in the *Day* than *Night*, more in the *Roots* than *Branch*, more *Southward*, and when *that*, and the *West Wind* blows, than *Northward*, &c. may yield many useful *Observations*: As for *Planting*, to set thicker, or thinner (*si cetera sint paria*) namely, the nature of the *Tree*, *Soyl*, &c.) and not to shade overmuch the *Roots* of those *Trees* whose *stems* we desire should mount, &c. That in *transplanting* *Trees* we turn the best, and largest *Roots* towards the *South*, and consequently the most ample, and spreading part of the *head* correspondent to the *Roots*: For if there be a strong *Root* on that *Quarter*, and but a feeble attraction in the *Branches*, this may not always counterpoise the weak *Roots* on the *North-side*, damnified by the too puissant attraction of over large *Branches*: this may also suggest a cause why *Trees* flourish more on the *South-side*, and have their *Integument*, and *Coates* thicker on those aspects *annually*, with divers other useful *speculations*, if in the mean time, they seem not rather to be *puntillos*, over nice for a plain *Forester*. Let the *Curious* further consult *Philos. Transactions* Numb. 43, 44, 46, 48, 57, 58, 68, 70, 71. for farther *Instances* and *Trials*, upon this subject of *Sap*.

7. To shew our *Reader* yet, that these are no novel *Experiments*, we are to know, that a large Tract of the World, almost altogether subsists on these *Tree* Liquors; Especially, that of the *Date*, which being grown to about seven, or eight foot in height, they wound, as we have taught, for the *Sap*, which they call *Toddy*, a very famous *Drink* in the *East-Indies*. This *Tree* increasing every year about a foot, near the opposite part of the first *Incisure*, they pierce again, changing the *Receivers*; and so still by opposite wounds, and Notches, they yearly draw forth the *Liquor*, till it arrive to near *thirty* foot upward, and of these they have ample *Groves*, and *Plantations* which they set at seven, or eight foot distance:

stance: But then they use to *percolate* what they extract, through a *Strainum* made of the *Rind* of the Tree, well contus'd and beaten, before which preparation, it is not safe to Drink it; and 'tis observed that some Trees afford a much more generous *Wine*, than others of the same kind. In the *Coco*, and *Palmeto* Trees, they Chop a Bough as we do the *Betula*; but in the *Date*, make the *Incision* with a *Chisel* in the Body very neatly, in which they stick a *Leaf* of the Tree, as a *lingula* to direct it into the appendent *Vessel*, which the subjoyn'd *Figure* represents, and illustrates with its improvement to our former Discourse.

Note, If there be no fitting Arms, the hole thus obliquely perforated, and a *Faucet* or pipe made of a Swans, or Gooses quill inserted, will lead the Sap into the Recipient; and this is a very neat way, and as effectual.



(a. b.) the body of the Tree (g.) board at that part of the Arm (f.) joyn'd to the Stem, with an *Angre* of an inch or more diameter, according to the bigness of the Tree. (c.) a part of the Bark, or if you will, a *Faucet* of quill bent down into the mouth of the Bottle (e.) to conduct the Liquor into it. (d.) the String about the Arm (f.) by which the Bottle hangs.

8. The



8. The *Liquor* of the *Birch* is esteem'd to have all the *Virtues* of the *Spirit of Salt*, without the danger of its *acrimony*; most powerful for the dissolving of the *Stone* in the *Bladder*: *Helmont* De Lithiast, c. 8. n. 24, 25. &c. shews how to make a *Beer* of the *Water*; but the *Wine* is a most rich *Cordial*, curing (as I am told) *Consumptions*, and such interior Diseases as accompany the *Stone* in the *Bladder* or *Reins*: The juice decocted with *hony* and *wine*, *Dr. Needham* affirms he has often cur'd the *Scorbut* with. This *Wine*, exquisitely made, is so strong, that the common sort of *stone-bottles* cannot preserve the *spirits*, so subtil they are and *volatile*; and yet it is gentle, and very harmless in operation within the *body*, and exceedingly sharpens the *Appetite*, being drunk *ante pastum*: I will present you a *Receipt*, as it was sent me by a fair *Lady*.

9. To every *Gallon* of *Birch-water* put a quart of *Hony*, well stirr'd together; then boyl it almost an hour with a few *Cloves*, and a little *Limon-peel*, keeping it well scumm'd: When it is sufficiently boil'd, and become cold, add to it three, or four spoonfulls of good *Ale* to make it work (which it will do like new *Ale*) and when the *Yeast* begins to settle, bottle it up as you do other *winy Liquors*. It will in a competent time, become a most brisk, and spiritous *Drink*, which (besides the former virtues) is a very powerful *opener*, and doing wonders for cure of the *Phthisick*: This *Wine* may (if you please) be made as successfully with *Sugar*, in stead of *Hony*, lbj. to each *Gallon* of *Water*; or you may dulcifie it with *Raisins*, and compose a *Raisin-wine* of it. I know not whether the quantity of the sweet *Ingredients* might not be somewhat reduc'd, and the operation improv'd: But I give it as receiv'd. The Author of the *Vinetum Brit.* boils it but to a *quarter* or *half* an hour, then setting it a cooling, adds a very little *Yeast* to ferment and purge it: and so barrels it with a small proportion of *Cinamon*, and *Mace* bruise'd, about half an ounce of both to ten *Gallons*, close stop'd, and to be bottled a month after. Care must be taken to set the *Bottles* in a very cool place, to preserve them from flying; and the *Wine* is rather for present drinking, than of long duration, unless the *Refrigeratorie* be extraordinarily cold.

10. But besides these, *Beech*, *Alder*, *Ash*, *Elder*, &c. would be attempted for *Liquors*: Thus *Crabs*, and even our very *Brambles*, may possibly yield us *medical*, and useful *Wines*. The *Poplar* was heretofore esteem'd more *Physical* than the *Betula*. The *Sap* of the *Oak*, juice, or decoction of the inner bark, cures the *Fashions*, or *Farcy*, a virulent and dangerous infirmity in *Horses*, and which (like *Cancers*) were reputed incurable by any other *Topic*, than some actual, or potential *cautery*: But, what is more noble; a dear Friend of mine assur'd me, that a Country Neighbour of his (at least *four-score* years of age) who had lain sick of a bloody *Strangury* (which by cruel torments reduc'd him to the very article of *Death*) was, under *God*, recover'd to perfect, and almost miraculous health, and strength (so as to be able to fall stoutly to his labour) by one sole Draught of *Beer*, wherein was the decoction

of the internal *bark* of the *Oak tree*; And I have seen a *Composition* of an admirable *sudorific*, and *diuretic* for all affections of the *Liver*, out of the like of the *Elm*, which might yet be drunk daily as our *Cophee* is, and with no less delight; but *Quacking* is not my *Trade*: I speak only here as a plain *Husband-man*, and a simple *Forester*, out of the limits whereof, I hope I have not unpardonably transgress'd: *Pan* was a *Physician*, and he (you know) was *President* of the *Woods*. But I proceed.

## C H A P. XVII.

Of the *Hasel*.

*Hasel.*

1. *N*ux *Sylvestris*, or *Corylus*, the *Hasel*, is best rais'd from the *Nuts*, (also by *Suckers* and *Layers*) which you shall sow like *Maß*, in a pretty deep *furrow* toward the end of *February*, or treat them as you are instructed in the *Wal-nut*; Light ground may immediately be sown and *barrow'd* in very accurately; but in case the mould be *clay*, plow it earlier, and let it be sufficiently mellow'd with the *Frosts*; and then the third year, cut your *Trees* near to the ground with a sharp *bill*, the *Moon* decreasing.

2. But if you would make a *Grove* for *Pleasure*, *Plant* them in *Fosses*, at a *yard* distance, and cut them within half a foot of the earth, dressing them for three, or four *Spring*s and *Autumns*, by only loosning the *Mould* a little about their roots. Others there are, who set the *Nuts* by hand at one foot distance, to be *transplanted* the third year at a *yard* asunder: But this work is not to be taken in hand so soon as the *Nuts* fall, till *Winter* be well advanced; because they are exceedingly obnoxious to the *Frosts*; nor will they sprout till the *Spring*; besides, *Vermine* are great devourers of them: Preserve them therefore *moist*, not *mouldy*; by laying them in their own *dry* leaves, or in *Sand*, till *January*.

*Hasels* from *Sets* and *Suckers* take.

*Plantis & dura Coryli nascuntur*

Georg. 2.

3. From whence they thrive very well, the *shoots* being of the scantlings of small *wands*, and *switches*, or somewhat bigger, and such as have drawn divers *hairy* twiggs, which are by no means to be disbranch'd, no more than their *Roots*, unless by a very sparing and discreet hand. Thus, your *Coryletum*, or *Coppice* of *Hasels* being *Planted* about *Autumn*, may (as some practise it) be cut within three, or four inches of the ground the *Spring* following, which the new *Cyön* will suddenly repair, in clusters, and tufts of fair *poles* of twenty, and sometimes thirty foot long: But I rather should spare them till two, or three years after, when they shall have

have taken strong hold, and may be cut close to the very Earth; the improsperous, and feeble ones especially. Thus are likewise *Filberts* to be treated, both of them improv'd much by *transplanting*; but chiefly by *Grafting*, and it would be try'd with *Filberts*, and even with *Almonds* themselves, for more elegant Experiments.

4. For the *Place*, they above all affect *cold, barren, dry, and Sandy* grounds; also *Mountains*, and even *Rockie* Soils produce them; but more plentifully, if somewhat moist, dankish, and mossie, as in the fresher *bottoms*, and sides of *Hills, Houls, and in Hedg-rows*. Such as are maintain'd for *Copp'ces*, may after Twelve years be *fell'd* the first time; the next, at seven or eight, &c. for by this period, their *Roots* will be compleatly vigorous. You may *Plant* them from *October* to *January*, provided you keep them carefully *Weeded*, till they have taken fast hold; and there is not among all our store, a more profitable wood for *Copp'ces*, and therefore good *Husbands* should store them with it.

5. The use of the *Hasel* is for *Poles, Spars, Hoops, Forks, Angling-rods, Faggots, Cudgels, Coals, and Springes* to catch birds; and it makes one of the best *Coals*, once us'd for *Gun-powder*, being very fine and Light, till they found *Alder* to be more fit; There is no Wood which purifies *Wine* sooner, than the *Chips* of *Hasel*: Also for *With's* and *Bands*, upon which, I remember *Pliny* thinks it a pretty *Speculation*, that a Wood should be stronger to bind withal, being *bruis'd* and *divided*, than when *whole* and *entire*; The *Coals* are us'd by *Painters*, to draw with like those of *sallow*: lastly, for *Riding Switches*, and *Divinatory Rods* for the detecting, and finding-out of *Minerals*; at least, if that *Tradition* be no imposture. But the most signal Honour it was ever employ'd in, and which might deservedly exalt this humble, and common *Plant* above all the *Trees* of the *Wood*, is that of *Hurdles*; not for that it is generally us'd for the Folding of our Innocent *Sheep*, an Emblem of the *Church*; but for making the *Walls* of one of the first *Christian Oratories* in the World; and particularly in this *Island*, that venerable, and Sacred *Fabrick* at *Glastenbury*, founded by *S. Joseph of Arimathea*, which is storied to have been first compos'd but of a few small *Hasel-Rods* interwoven about certain *Stakes* driven into the ground; and *Walls* of this kind, in stead of *Laths* and *Punchions*, superinduc'd with a course *Mortar* made of *loam* and *straw*, does to this day, inclose divers humble *Cottages, Sheads* and *Out-houses* in the Countrey; and 'tis strong, and lasting for such purposes, *whole*, or *cleft*, and I have seen ample enclosures of *Courts, and Gardens* so secur'd.

6. There is a compendious expedient for the thickning of *Copp'ces* which are too *transparent*, by laying of a *Sampler* or *Pole* of an *Hasel, Ash, Poplar, &c.* of twenty, or thirty foot in length (the head a little lopp'd) into the ground, giving it a *Chop* near the foot, to make it succumb; this fastned to the earth with a *hook* or two, and cover'd with some fresh *mould* at a competent depth (as *Gardeners* lay their *Carnations*) will produce a world  
of



of *Suckers*, thicken, and furnish a *Copp'ce* speedily. But I am now come to the *Water-side*; let us next consider the *Aquatic*.

## CHAP. XVIII.

### Of the Poplar, Aspen, and Abele.

*Poplar.* 1. *Populus*. I begin this second *Class* (according to our former *distribution*) with the *Poplar*, of which there are several kinds; *White*, *Black*, &c. (which in *Candy* 'tis reported bears seed) besides the *Aspen*. The *white* (famous heretofore for yielding its *Umbram hospitalem*) is the most ordinary with us, to be rais'd in abundance by every *set* or *slip*. Fence the ground as far as any old *Poplar* roots extend, they will furnish you with *suckers* innumerable, to be slipp'd from their *mothers*, and *transplanted* the very first year: But if you cut down an old Tree, you shall need no other *Nursery*. When they are young, their *leaves* are somewhat broader and rounder (as most other *Trees* are) than when they grow aged. In moist, and *boggie* places they will flourish wonderfully, so the ground be not *spewing*; but especially near the *margins* and banks of *Rivers*,

#### *Populus in fluviis* —

and in low, sweet, and fertile grounds, yea and in the dryer likewise. Also *trunchions* of seven, or eight foot long, thrust two foot into the *earth*, (a hole being made with a sharp hard *stake*, fill'd with *water*, and then with fine *earth* pressed in, and close about them) when once *rooted*, may be cut at six inches above ground; and thus placed at a yard distant, they will immediately furnish a kind of *Copp'ce*. But in case you plant them of *rooted trees*, or smaller *sets*, fix them not so *deep*; for though we bury the *trunchions* thus profound, yet is the *root* which they strike commonly but shallow. They will make prodigious *shoots* in 15, or 16 years; but then the *heads* must by no means be diminish'd, but the lower branches may, yet not too far up; the *foot* would also be cleansed every second year. This for the *White*. The *Black Poplar* is frequently *pollar'd* when as big as ones arm, eight or nine foot from the ground, as they trim them in *Italy*, for their *Vines* to serpent on, and those they *poll*, or *head* every second year, sparing the middle, streight, and thrivingest *shoot*, and at the third year cut *him* also.

2. The *shade* of this tree is esteemed very wholesome in *Summer*, but they do not become *Walks*, or *Avenues* by reason of their *Suckers*, and that they foul the ground at fall of the leaf; but they would be planted in barren *Woods*, and to flank places at distance,  
for

for their increase, and the glittering brightness of their foliage: The leaves are good for *cattel*, which must be stripp'd from the cut boughs before they are faggotted. This, to be done in the decrease of *October*, and reserv'd in bundles for winter fodder. The wood of white *Poplar* is sought of the *sculptor*, and they saw both sorts into boards, which, where they lie dry, continue a long time. Of this material they also made *shields* of defence in *Sword and Buckler* days. *Dioscorides* writes, that the bark chopt small, and sow'd in rills, well, and richly manur'd and watered, will produce a plentiful crop of *Mushrooms*; or warm *Water*, in which *Yeast* is dissolv'd, cast upon a new cut *stump*: It is to be noted, that those *Fungi*, which spring from the putrid stumps of this tree, are not *venenous* (as of all, or most other trees they are) being gathered after the first *Autumnal* rains. There is a *Poplar* of a paler green, and is the properest for watry ground: 'twill grow of *Trunchions* from two, to eight foot long, and bringing a good *top* in a short time, is by some preferr'd to *Willows*.

For the setting of these, Mr. *Cook* advises the boring of the ground with a sort of *Auger*, to prevent the stripping of the bark from the stake in planting: a foot and half deep, or more if great, (for some may be 8, or 9 foot) for *Pollards*, cut sloping, and free of cracks at either end: two or three inches *diametre* is a competent bigness, and the earth should be ram'd close to them.

Another expedient is, by making *drains* in very moist ground, two spade deep, and three foot wide, casting up the Earth between the *drains*, sowing it the first year with *Oats* to mellow the ground, the next winter setting it for *Copp'ce*, with these, any, or all the watry sorts of Trees; Thus, in four or five years, you will have a handsome *fell*, and so successively: It is in the former *Author*, where the charge is exactly calculated, to whom I refer the *Reader*.

3. They have a *Poplar* in *Virginia* of a very peculiar shap'd leaf, as if the point of it were cut off, which grows very well with the curious amongst us to a considerable stature. I conceive it was first brought over by *John Tradescant* under the name of the *Tulip-tree*, but is not that I find taken notice of in any of our *Herbals*; I wish we had more of them.

4. The *Aspen* only (which is that kind of *Lybica* or white *Poplar*, bearing a smaller, and more tremulous leaf) thrusts down a more searching foot, and in this likewise differs, that he takes it ill to have his head cut off: *Pliny* would have short *trunchions* couched two foot in the ground (but first two days dried) at one foot and half distance, and then moulded over.

5. There is something a finer sort of white *Poplar*, which the *Dutch* call *Abele*, and we have much transported out of *Holland*: these are also best propagated of *slips* from the roots, the least of which will take, and may in *March*, at three, or four years growth, be transplanted.

6. In *Flanders* (not in *France*, as a late *Author* pretends) they have large *Nurseries* of them, which first they plant at one foot distance,

stance, the mould light, and moist, by no means *clayie*, in which though they may shoot up tall, yet for want of root, they never spread; for, as I said, they must be *interr'd* pretty deep, not above three inches above ground; and kept clean, by *pruning* them to the middle *shoot* for the first two years, and so till the third, or fourth. When you *transplant*, place them at eight, ten, or twelve foot interval: They will likewise grow of *layers*, and even of *cuttings* in very moist places. In *three years*, they will come to an incredible altitude; in *twelve*, be as big as your middle; and in *eighteen or twenty*, arrive to full perfection. A *specimen* of this advance we have had of an *Abele* tree at *Sion*, which being lopp'd in *Febr. 1651*, did by the end of *October 52* produce branches as big as a mans *wrist*, and 17 foot in length; for which celerity we may recommend them to such late *builders*, as seat their *houses* in naked, and unsheltered places, and that would put a guise of *Antiquity* upon any new *Inclosure*; since by these, whilst a man is in a *voyage* of no long continuance, his *house* and *lands* may be so covered, as to be hardly known at his return. But as they thus increase in *bulk*, their *value* (as the *Italian Poplar* has taught us) advances likewise; which after the first seven years, is annually worth *twelve pence* more; So as the *Dutch* look upon a *plantation* of these *trees*, as an ample portion for a *daughter*, and none of the least effects of their good *Husbandry*; which truly may very well be allow'd, if that *calculation* hold, which the *Knight* has asserted, who began his *plantation* not long since about *Richmond*, that 30 pound being laid out in these *plants*, would render at the least *ten thousand pounds* in *eighteen years*; every *tree* affording thirty *plants*, and every of them thirty more, after each seven years improving *twelve pence* in growth, till they arrived to their *acme*.

7. The *Black Poplar* grows rarely with us; it is a stronger, and taller tree than the *White*, the *leaves* more dark, and not so ample. Divers stately ones of these, I remember about the banks of *Po* in *Italy*; which flourishing near the old *Eridanus* (so celebrated by the *Poets*) in which the temerarious *Phaeton* is said to have been precipitated, doubtless gave argument to that *fiction* of his sad Sisters *Metamorphosis*, and the *Amber* of their pretious *tears*. It was whiles I was passing down that River towards *Ferrara*, that I diverted my self with this story of the ingenious *Poet*. I am told there is a *Mountain-Poplar* much propagated in *Germany* about *Vienna*, and in *Bohemia*, of which some trees have yielded *Planks* of a yard in breadth; why do we procure none of them?

8. The best use of the *Poplar*, and *Abele* (which are all of them hospitable trees, for any thing thrives under their *shades*) is for *Walks*, and *Avenues* about Grounds which are situated low, and near the water, till coming to be very old, they are apt to grow *knurly*, and out of proportion. The *timber* is incomparable for all sorts of white wooden *vessels*, as *Trays*, *Bowls* and other *Turners* ware; and of especial use for the *Bellows-maker*, because it is almost of the nature of *Cork*, and for *Ship-pumps*, though not very solid, yet very close: also for *wooden heels*, &c. *Vitruvius* l. 2. de *materia*



*materia cadenda*, reckons it among the Building-timbers, *que maxime in aedificiis sunt idoneae*. Likewise to make *Carts*, because it is exceeding light; for *Vine*, and *Hop-prop*, and divers *vimineous* works. The loppings in *January* are for the *fire*; and therefore such as have proper Grounds, may with ease, and in short time, store themselves for a considerable *family*, where *fuel* is dear: but the truth is, it burns untowardly, and rather moulders away, than maintains any solid heat. Of the *twigs* (with the leaves on) are made *Brooms*. The *Brya*, or *Catkins* attract the *Bees*, as do also the *leaves* (especially of the *black*) more tenacious of the *Mel-dews* than most *Forest-trees*, the *Oak* excepted.

Of the *Aspen*, our *Wood-men* make *Hoopt*, *Fire-wood*, and *Coals*, &c.

The juice of *Poplar* leaves, drop'd into the *ears*, asswages the pain; and the *buds* contus'd, and mix'd with *Hony*, is a good *Collyrium* for the *eyes*: as the *Unguent*, to *refrigerate* and cause *sleep*.

## CHAP. XIX.

### *Of the Alder.*

I. *Alnus*, the *Alder*, is of all other the most faithful lover of *Alder*: *watery* and *boggie* places, and those most despis'd weeping parts, or *water-galls* of *Forests*; — *crassisque paludibus Alni*. They are propagated of *Trunchions*, and will come of *seeds* (for so they raise them in *Flanders*, and make wonderful profit of the *plantations*) like the *Poplar*; or of *Roots*, which I prefer, being set as big as the small of ones leg, and in length about two foot; whereof one would be plunged in the *mud*. This profound fixing of *Aquatich-trees* being to preserve them *steddy*, and from the concussions of the *winds*, and violence of *waters*, in their *liquid*, and slippery foundations. They may be placed at four, or five foot distance, and when they have struck *root*, you may *cut* them, which will cause them to spring in *clumps*, and to shoot out into many useful *Poles*. But if you plant smaller *Sets*, cut them not till they are arriv'd to some competent bigness; and that in a proper *season*: which is, for all the *Aquatics* and soft woods, not till *Winter* be well advanc'd, in regard of their *pithy* substance. Therefore, such as you shall have occasion to make use of before that period, ought to be well-grown, and *fell'd* with the *earliest*, and in the first *quarter* of the increasing *Moon*; that so the successive *shoot* receive no prejudice. But there is yet another way of planting *Alders* after the *Jersey* manner, and as I receiv'd it from a most ingenious *Gentleman* of that Country, which is, by taking *trunchions* of two, or three foot long, at the beginning of *Winter*, and to bind them in *faggots*, and place the *ends* of them in *water* till to-

wards the *Spring*, by which season they will have contracted a swelling *spire*, or *knurr* about that part, which being set, does (like the *Gennet-moil* Apple) never fail of growing and striking root. There is a *black* sort more affected to *Woods*, and drier grounds.

2. There are a sort of *Husbands* who take excessive pains in *stubbing* up their *Alders*, where ever they meet them in the *boggie* places of their grounds, with the same indignation as one would extirpate the most pernicious of *Weeds*; and when they have finished, know not how to convert their best *lands* to more profit than this (seeming despicable) *plant* might lead them to, were it rightly understood. Besides, the *shadow* of this *tree*, does feed, and nourish the very *grass* which grows under it; and being set, and well plashed, is an excellent defence to the banks of *Rivers*; so as I wonder it is not more practis'd about the *Thames*, to fortifie, and prevent the mouldring of the *walls*, and the violent *weather* they are exposed to.

3. You may cut *Aquatic-trees* ever third or fourth year, and some more frequently, as I shall shew you hereafter. They should also be abated within half a foot of the principal *head*, to prevent the perishing of the main *stock*; and besides, to *accelerate* their sprouting. In setting the *Trunchions*, it were not amiss to prepare them a little after they are fitted to the size, by laying them a while in *water*; this is also practicable in *Willows*, &c.

4. Of old they made *Boats* of the greater parts of this Tree, and excepting *Noah's Ark*, the first *Vessels* we read of, were made of this *Wood*.

When hollow Alders first the Waters tri'd,

Tunc alnos primum fluvii sensere cavatas.

Georg. 1.

And down the rapid Pore light Alders glide.

Nec non & torrentem undam levis innatat alnus  
Missa Pado

2.

And as *then*, so *now*, are over-grown *Alders* frequently sought after, for such *Buildings* as lye continually under *water*, where it will harden like a very *stone*; whereas being kept in any constant temper, it *Rots* immediately, because its natural *humidity* is of so near affinity with its adventitious, as *Scaliger* assigns the cause. *Vitruvius* tells us, that the *Morasses* about *Ravenna* in *Italy*, were pil'd with this *Timber*, to *superstruct* upon, and highly commends it. I find also they us'd it under that famous *Bridge* at *Venice*, the *Rialto*, which passes over the *Gran-Canal* bearing a vast weight.

5. The *Poles* of *Alder* are as useful as those of *Willows*; but the *Coals* far exceed them, especially for *Gun-powder*: The wood is likewise useful for *Piles*, *Pumps*, *Hop-poles*, *Water-pipes*, *Troughs*, *Sluces*, small *Trays*, and *Trenchers*, *Wooden-beels*; the *bark* is precious to *Dyers*, and some *Tanners*, and *Leather-dressers* make use of it; and with it, and the *Fruits* (in stead of *Galls*) they compose an *Ink*. The fresh *Leaves* alone applied to the naked *soal* of the *Foot*, infinitely refresh the furbated *Traveller*. The *bark* macerated in *water*, with a little *rust* of *Iron*, makes a *black dye*, which may also

also be us'd for *Ink*: The interior *rind* of the *Black Alder* purges all *Hydropic*, and *Serous* humours; but it must be dry'd in the shade, and not us'd green, and the *decoction* suffer'd to settle two or three days, before it be drunk.

Being beaten with *Vinegar*, it heals the *Itch* certainly: As to other *Uses* the swelling *bunches*, which are now and then found in the old Trees, afford the *Inlayer* pieces curiously *chamblotted*, and very hard, &c. but the *Fagots* better for the *Fire*, than for the *draining* of Grounds by placing them (as the guise is) in the *Trenches*; which old rubbish of *Flints*, *Stones*, and the like gross materials, does infinitely exceed, because it is for ever, preserves the *Drains* hollow, and being a little moulded over, will produce good *grass*, without any detriment to the ground; but this is a *secret*, not yet well understood, and would merit an express *Paragraph*, were it here seasonable.

——— *Et jam nos inter opacas*  
*Musa vocat Salices* ——

## C H A P. XX.

### *Of the Withy, Sallow, Ozier, and Willow.*

1. *S*alix, since *Cato* has attributed the *third place* to the *Sali-* Withy.  
*um*, preferring it even next to the very *Ortyard*; and (what one would wonder at) before even the *Olive*, *Meadow*, or *Corn-field* it self (for *Salicū tertio loco, nempe post vineam, &c.*) and that we find it so easily rais'd, of so great, and universal *Use*, I have thought good to be the more particular in my Discourse upon them; especially, since so much of that which I shall Publish concerning them, is deriv'd from the long *Experience* of a most Learned, and ingenious *Person*, from whom I acknowledge to have receiv'd many of these hints. Not to perplex the Reader with the various names, *Greek*, *Gallic*, *Sabinic*, *Amerine*, *Vitex*, &c. better distinguish'd by their *growth*, and *bark*; and by *Latine Authors* all comprehended under that of *Salices*; our *English Books* reckon them promiscuously thus; The *Common-white Willow*, the *Black*, and the *Hard-black*, the *Rose of Cambridge*, the *Black-Withy*, the *Round-long Sallow*; the longest *Sallow*, the *Crack-Willow*, the *round-Ear'd shining Willow*, the *Lesser broad-leav'd Willow*, *Silver Sallow*, *Upright broad-Willow*, *Repent broad-leav'd*, the *Red-stone*, the *Lesser Willow*, the *Strait-Dwarf*, the *yellow Dwarf*, the *long leav'd yellow Sallow*, the *Creeper*, the *Black-low Willow*, the *Willow-bay*, and the *Ozier*. I begin with the *Withy*.

2. The *Withy* is a reasonable large *Tree*, and fit to be planted



on high Banks, and *ditch* sides within reach of water, and the weeping sides of *Hills*; because they extend their Roots deeper than either *Sallows* or *Willows*. For this reason you shall Plant them at ten, or twenty foot distance; and though they grow the slowest of all the *Twiggie* Trees, yet do they recompence it with the larger *crop*; the *wood* being tough, and the *Twigs* fit to bind strongly; the very *peelings* of the branches being useful to bind *Arbor*-poling, and in *Topiary* works, *Vine*-yards, *Espalier*-fruit, and the like. There are two principal sorts of these *Withies*, the *hoary*, and the *red-Withy*, which is the *Greek*; toughest, and fittest to *bind*, whiles the *Twigs* are flexible and tender.

*Sallow.*

3. *Sallows* grow much faster, if they are Planted within reach of *water*, or in a very *Moorish* ground, or flat plain; and where the Soil is (by reason of extraordinary moisture) unfit for *Arable*, or *Meadow*; for in these cases, it is an extraordinary *improvement*; In a word, where *Birch*, and *Alder* will thrive. Before you Plant them, it is found best to turn the ground with a *Spade*; especially, if you design them for a flat. We have three sorts of *Sallows* amongst us (which is *one* more than the *Ancients* challeng'd, who name only the *Black*, and *White* which was their *Nitellina*) the *vulgar* round leaf, which proves best in dryer Banks, and the *hopping-Sallows*, which require a moister Soil, growing with incredible celerity: And a *third* kind, of a different colour from the other *two*, having the twigs *reddish*, the Leaf not so long, and of a more *dusky green*; more brittle whilst it is growing in *twigs*, and more tough when arriv'd to a competent size: All of them useful for the *Thatcher*.

4. Of these, the *hopping-Sallows* are in greatest esteem, being of a clearer *terse* grain, and requiring a more *succulent* Soil; best planted a foot deep, and a foot and half above ground (though some will allow but a foot) for then every branch will prove excellent for future *jettlings*. After *three* years growth (being cropped the second, and third) the first years increase will be *twixt eight*, and *twelve* foot long generally; the *third* years growth, strong enough to make *Rakes*, and *Pike-staves*; and the *fourth* for Mr. *Blithes's* trenching *Plow*, and other like *Utenfils* of the *Husband-man*.

5. If ye Plant them at full height (as some do, at four years growth, setting them five, or six foot length, to avoid the biting of *Cattel*) they will be less useful for straight *staves*, and for *settlings*, and make less speed in their growth; yet this also is a considerable *improvement*.

6. These would require to be Planted at least five foot distance, (some set them as much more) and in the *Quincunx* order: If they affect the *Soil*, the *Leaf* will come large, half as broad as a Man's hand, and of a more vivid *green*, always larger the first year, than afterwards: Some Plant them sloping, and cross-wise like a *Hedge*, but this impedes their wonderful growth; and (though *Pliny* seems to commend it, teaching us how to *excorticate* some places of each *set*, for the sooner production of *shoots*) it is but a deceitful

deceitful Fence, neither fit to keep out *Swine*, nor *Sheep*; and being set too near, inclining to one another, they soon destroy each other.

7. The worst *Sallows* may be planted so near yet, as to be instead of *Stakes* in a *Hedge*, and then their *Tops* will supply their dwarfishness; and to prevent *Hedge-breakers*, many do thus Plant them; because they cannot easily be pull'd up, after once they have struck root.

8. If some be permitted to wear their *Tops* five, or six years, their *Palms* will be very ample, and yield the first, and most plentiful relief to *Bees*, even before our *Abricots* Blossom. The hopping-*Sallows* open, and yield their *Palms* before other *Sallows*, and when they are blown (which is about the exit of *May*, or sometimes *June*) the *Palms* (or *ἀλιουργοί*, *fragiperdæ* as *Homer* terms them for their extream levity) are four inches long, and full of a fine lanuginous Cotton: A poor Body might in an hours space, gather a pound or two of it, which resembling the finest *Silk*, might doubtless be converted to some profitable use, by an ingenious *House-wife*, if gather'd in calm *Evenings*, before the *Wind*, *Rain*, and *Dew* impair them; I am of opinion, if it were dri'd with care, it might be fit for *Cushions*, and *Pillows* of *Chastity*, for such of old was the reputation of those *Trees*.

9. Of these hopping *Sallows*, after three years Rooting, each Plant will yield about a score of *Staves*, of full eight foot in length, and so following, for use, as we noted above: Compute then how many fair *Pike-staves*, *Perches*, and other useful *Materials*, that will amount to in an *Acre*, if Planted at five foot interval: But a fat and moist Soil, requires indeed more space, than a lean or drier; namely *six*, or *eight* foot distance.

10. You may Plant *setlings* of the very first years growth; but the *second* year they are better, and the *third* year, better than the *second*; and the *fourth*, as good as the *third*; especially, if they approach the *Water*. A bank at a foot distance from the *water*, is kinder for them than a *Bog*, or to be altogether immer'd in the *water*.

11. 'Tis good to new-mould them about the *Roots* every second, or third year; but *Men* seldom take the pains. It seems that *Sallows* are more hardy, than even *Willows* and *Oziers*, of which *Columella* takes as much care as of *Vines* themselves. But 'tis cheaper to supply the vacuity of such accidental decays, by a new *Plantion*, than to be at the charge of digging about them three times a year, as that *Author* advises; seeing some of them will decay, whatever care be used.

12. *Sallows* may also be propagated like *Vines*, by *conrbing*, and bowing them in *Arches*, and covering some of their parts with mould, &c. Also by *Cuttings*, and *Layers*, and some years by the *seeds* likewise.

13. For *Setlings*, those are to be preferr'd which grow nearest to the *stock*, and so (consequently) those worst, which most approach the *Top*. They should be Planted in the first fair, and pleasant

pleasant Weather in *February*, before they begin to *bud*; we about *London* begin at the latter end of *December*. They may be cut in *Spring* for *Fuel*, but best in *Autumn* for *use*; but in this work (as of *Poplar*) leave a *twig* or two; which being twist-*ed Arch-wise*, will produce plentiful *sprouts*, and suddenly furnish a *head*.

14. If in our *Copp'ces* one in four were a *Sallow* set, amongst the rest of varieties, the profit would recompence the care; therefore where in *woods* you grub up *Trees*, thrust in *Trunchions* of *Sallows*, or some *Aquatic* kind.

15. The swift growing *Sallow* is not so tough, and hardy for some *uses* as the *flower*, which makes *Stocks* for Gard'ners *Spades*; but the other are proper for *Rakes*, *Pikes*, *Mops*, &c. *Sallow-Coal* is the soonest consum'd; but of all others, the most easie and accommodate for *Painters Scribets* to design their *Work*, and *first draught* on *Paper* with &c. as being fine, and apt to slit into *Pencils*.

16. To conclude, there is a way of *Grafting* a *Sallow* trunchion; take it of two foot and half long, as big as your *wrist*; Graft at both ends a *Figure*, and *Mulberry Cyon* of a foot long, and so, without *claying*, set the *Stock* so far into the ground, as the *Plant* may be three, or four inches above the *Earth*: This (some affirm) will thrive exceedingly the *first* year, and in *three*, be fit to *transplant*. The season for this *Curiosity* is *February*. Of the *Sallow* is made the *Shoo-makers* carving or *Cutting-board*, as best to preserve the *edge* of their *knives*, for its equal softness every way.

17. *Oziers*, or the *Aquatic Salix*, are of innumerable kinds, commonly distinguish'd from *Sallows*, as *Sallows* are from *Withies*; being so much smaller than the *Sallows*, and shorter *liv'd*, and requiring more constant *moisture*, yet would be Planted in rather a *dryish* ground, than over *moist* and spewing, which we frequently cut *Trenches* to avert: It likewise yields more limber, and flexible *twigs* for *Baskets*, *Flaskets*, *Hampers*, *Cages*, *Lattices*, *Cradles*, the Bodies of *Coaches*, and *Wagons*, for which 'tis of excellent use, light, durable, and neat, as it may be wrought and cover'd: For *Chairs*, *Hurdles*, *Stays*, *Bands*, &c. likewise for *Fish Wairs*, and to support the *Banks* of impetuous *Rivers*: In fine, for all *Wicker*, and *Twiggie* works:

*Viminibus Salices*—

18. But these sort of *Oziers* would be cut in the new *shoot*; for if they stand longer, they become more inflexible; cut them close to the *head* (a foot, or so above earth) about the beginning of *October*; unless you will attend till the *Cold* be past, which is better; and yet we about *London*, cut them in the most piercing *seasons*, and Plant them also till *Candlemas*, which those who do not observe, we judge ill *Husbands*, as I learn from a very *Experienc'd Basket-maker*; and in the *decrease*, for the benefit of the *Workman*, though not altogether for *that* of the *Stock*, and succeeding



ing shoot : When they are cut, make them up into *bundles*, and give them shelter ; but such as are for *White-work* (as they call it) being thus *fagotted*, and made up in *Bolts*, as the term is, severing each sort by themselves, should be set in *water*, the ends dipped ; but for *black*, and *unpeel'd*, preserv'd under Covert only, or in some *Vault* or *Cellar*, to keep them *fresh*, sprinkling them now and then in excessive hot Weather : The *peelings* of the former, are for the use of the *Gard'ner* and *Cooper*, or rather the *splicings*.

19. We have in *England* these three *vulgar* sorts ; one of little worth, being brittle, and very much resembling the fore-mention'd *Sallow*, with reddish twigs, and more greenish, and rounder Leaves : Another kind there is, call'd *Perch*, of limber, and green twigs, having a very slender leaf ; the *third* sort is totally like the *second*, only the twigs are not altogether so green, but *yellowish*, and near the *Popinjay* : This is the very best for Use, tough, and hardy. But the most usual names by which *Basket-makers* call them about *London*, and which are all of different *species* (therefore to be Planted separately) are, the *hard-Gelster*, the *Horse-Gelster*, *Whyning*, or *shrivell'd-Gelster*, the *Black-Gelster*, in which *Suffolk* abounds. Then follow the *Golstones*, the *hard*, and the *soft Golstone* (brittle, and worst of all the *Golstones*) the *sharp*, and slender top'd *yellow-Golstone* ; the *fine Golstone* : Then is there the *yellow Ozier*, the *green Ozier*, the *Snake*, or *speckled Ozier*, *Swallow-tayl*, and the *Spaniard* : To these we may add (amongst the munber of *Oziers*, for they are both govern'd and us'd alike) the *Flanders Willow*, which will arrive to be a large *Tree*, as big as ones middle, the oftner cut, the better : With these our *Coopers* tie their *Hoops*, to keep them bent. Lastly, the *white-Sallow*, which being of a Year or two growth, is us'd for *Green-work* ; and if of the toughest sort, to make *quarter-Can-hoops*, of which our *Seamen* provide great quantities, &c.

20. These choicer sorts of *Oziers*, which are ever the *smallest*, also the *golden-yellow*, and *white*, which is preferr'd for propagation, and to breed of, should be Planted of *slips* of two, or three years growth, a foot deep, and half a yard length, in *Moorish* ground, or *banks*, or else in *furrows* ; so that (as some direct) the *Roots* may frequently reach the *water* ; for *Fulminibus Salices*—though we commonly find it *rots* them, and therefore never choose to set them so deep as to scent it, and at three, or four foot distance.

21. The *Season* for Planting is *January*, and all *February*, though some not till mid-*February*, at two foot square ; but *Cattel* being excessively liquorish of their *leaves* and tender *buds*, some talk of a *grafting* them but of reach upon *Sallows*, and by *this*, to advance their sprouting ; but as the *work* would consume time, so have I never seen it succeed.

22. Some do also Plant *Oziers* in their *Eights*, like *Quick-sets*, thick, and (near the water) keep them not more than half a foot above ground ; but then they must be diligently cleans'd from *Moss*, *slab*, and *Ouze*, and frequently *prun'd* (especially the smaller spires)

to form single shoots; at least, that few, or none grow double: These, they head every second year about September, the *Autumnal* cuttings being best for use: But generally

23. You may cut *Withies*, *Salows*, and *Willows*, at any mild, and gentle season between leaf and leaf, even in *Winter*; but the most congruous time both to Plant, and to cut them, is *Crescente Luna Vere, circa calendæ Martiæ*; that is, about the new Moon, and first open weather of the early Spring.

24. It is in *France*, upon the *Loire*, where these *Eights* (as we term them) and Plantations of *Oziers*, and *Withies* are perfectly understood; and both there, and in divers other Countries beyond Seas, they raise them of *Seeds*, contain'd in their *Tuli*, or *Catkins*, which they sow in *Furrows*, or shallow *Trenches*, and it springs up like *Corn* in the blade, and comes to be so tender and delicate, that they frequently mow them with a *Scyth*: This we have attempted in *England* too, even in the place where I live, but the obstinate, and unmerciful *Weed* did so confound them, that it was impossible to keep them clean with any ordinary Industry, and so they were given over: It seems either *weeds* grow not so fast in other Countries, or that the *People* (which I rather think) are more patient and laborious. Note, that these *Tuli*, are not all of them *seed-bearers*, some are *sterile*, and whatever you raise of them, will never come to bear; and therefore by some they are call'd the *Male* sort, as Mr. *Ray* (that learned *Botanist*) has observ'd. The *Ozier* is of that Emolument, that in some places I have heard twenty pounds has been given for one Acre; ten is in this part an usual price; and doubtless, it is far preferable to the best *Cornland*; not only for that it needs but once Planting, but because it yields a constant Crop, and revenue to the Worlds end; and is therefore in esteem of knowing Persons, valu'd in Purchase accordingly; consider'd likewise, how easily 'tis renew'd, when a Plant now and then fails, by but pricking in a twig of the next at hand, when you visit to cut them: We have in this *Parish* where I dwell, improv'd Land from less than one pound, to near ten pounds the Acre: And when we shall reflect upon the infinite quantities of them we yearly bring out of *France* and *Flanders*, to supply the extraordinary expence of *Basket-work*, &c. for the *Fruiterers*, *Lime-burners*, *Gardeners*, *Coopers*, *Packers* up of all sorts of *Ware*, and for general Carriage, which seldom last above a Journey or two; I greatly admire *Gentlemen* do no more think of employing their *moist grounds* (especially, where *Tides* near fresh *Rivers* are reciprocal) in Planting, and propagating *Oziers*. To omit nothing of the Culture of this useful *Ozier*, *Pliny* would have the place to be prepar'd by trenching it a foot, and half deep, and in that, to fix the *sets*, or cuttings of the same length at six foot interval. These (if the *sets* be large) will come immediately to be *Trees*; which after the first three years, are to be abated within two foot of the ground. Then, in *April*, he advises to dig about them: Of these they formerly made *Vine-props*, and one Acre hath been known to yield Props sufficient, to serve a *Vineyard* of twenty five Acres.

25. *John Tradescant* brought a small *Ozier* from *S. Omers* in *Flanders*, which makes incomparable *Net-works*, not much inferior to the *Indian* twig, or *bent-works* which we have seen; but if we had them in greater abundance, we should haply want the *Artificers* who could employ them, and the dexterity to *Varnish* so neatly.

26. Our common *Salix* or *Willow*, is of two kinds, the *white* and *Willow*. the *black*: The *white* is also of two sorts, the one of a *yellowish*, the other of a *browner* Bark: The *black Willow* is Planted of *stakes*, of three years growth, taken from the head of an *old Tree*, before it begins to sprout: Set them of six foot high, and ten distant; as directed for the *Poplar*. Those *Woody* sorts of *Willow*, delight in *Meads*, and *Ditch-sides*, rather *dry*, than over *wet* (for so they last longest) yet the *black* sort, and the *reddish*, do sometimes well in more *boggy* grounds, and would be Planted of *stakes* as big as one's *Leg*, cut as the other, at the length of five, or six foot, or more into the earth; the *hole* made with an *Oken-stake* and beetle, or with an *Iron crow* (some use a long *Auger*) so as not to be forced in, with too great violence. But first, the *Trunchions* should be a little slop'd at both extremities, and the biggest planted downwards: To this, if they are *soak'd* in *water* two or three days (after they have been siz'd for length, and the twigs cut off ere you plant them) it will be the better. Let this be done in *February*; the *mould* as well clos'd to them as possible, and treated as was taught in the *Poplar*. If you Plant for a kind of *Wood*, or *Copp'ce* (for such I have seen) set them at six foot distance, or nearer, in the *Quincunx*, and be careful to take away all *Suckers* from them at three years end: You may abate the *head* half a foot from the *Trunk*, viz. three, or four of the lustiest *Shoots*, and the rest cut close, and *bare* them yearly, that the *three, four* or more you left, may enjoy all the *sap*, and so those which were spared, will be *gallant* *Pearches* within two years. Arms of four years growth, will yield substantial *sets*, to be Planted at eight, or ten foot distance; and for the first three years well defended from the *Cattel*, who infinitely delight in their *leaves*, green, or wither'd. Thus, a *Willow* may continue *twenty*, or *five* and *twenty* years, with good profit to the industrious *Planter*, being *headed* every four, or five years; some have been known to shoot no less than *twelve* foot in one year, after which, the old, rotten *Dotards* may be *sell'd*, and easily suppli'd. But if you have ground fit for whole *Copp'ces* of this *wood*, cast it into double *Dikes*, making every *fosse* near three foot wide, two and half in depth; then leaving four foot at least of ground for the earth (because in such *Plantations* the moisture should be below the *Roots*, that they may rather see, than feel the *Water*) and two *Tables* of *Sets* on each side, plant the *Ridges* of these *Banks* with but one single *Table*, longer, and bigger than the *Collateral*, viz. three, four, five or six foot high, and distant from each other, about two yards. These *banks* being carefully kept *weeded* for the first two years, till the *Plants* have vanquish'd the *Grass*, and not cut till the *third*; you may then lop them *traverse*,



verse, and not obliquely, at one foot from the ground, or somewhat more, and they will head to admiration: But such which are cut at three foot height, are most durable, as least soft and *aquatic*: They may also be *Grafted* 'twixt the *Bark*, or *budded*; and then they become so beautiful, as to be fit for some kind of delightful *Walks*; and this I wish were practis'd among such as are seated in low, and Marshy places, not so friendly to other *Trees*. Every *Acre* at eleven, or twelve years growth, may yield you near an *hundred Load* of *Wood*: Cut them in the *Spring* for dressing, but in the *Fall* for *Timber* and *Fuel*: I have been inform'd, that a *Gentleman* in *Essex*, has lopp'd no less than 2000 yearly, all of his own planting. It is far the sweetest of all our *English Fuel*, provided it be sound and dry, and emitting little *Smoak*, is the fittest for *Ladies Chambers*; and all those *Woods*, and *Twigs* would be cut either to *Plant*, *Work* with, or *Burn* in the dryest time of the day.

27. There is a sort of *Willow* of a slender, and long *Leaf*, resembling the smaller *Ozier*; but rising to a *Tree* as big as the *Sallow*, full of *knots*, and of a very brittle *spray*, only here rehears'd to acknowledge the *variety*.

28. There is likewise the *Garden-willow*, which produces a sweet, and beautiful *flower*, fit to be admitted into our *Hortulan* ornaments, and may be set for *partitions* of *squares*; but they have no affinity with other. There is also in *Shropshire* another very *odoriferous* kind, extremely fit to be planted by pleasant *Rivulets*, both for ornament and profit: It is propagated by *cuttings* or *layers*, and will grow in any dry bottom, so it be sheltered from the *South*, affording a wonderful and early relief to the industrious *Bee*: *Vitruvius* commends the *Vitex* of the *Latines* (impertinently call'd *Agnus Castus*, the one being but the *interpretation* of the other) as fit for *building*; I suppose they had a sort of better stature than the *shrub* growing among the *curious* with us, and which is celebrated for its *chast* effects, and for which the *Antients* employ'd it in the *Rites* of *Ceres*: I rather think it more convenient for the *Sculptor* (which he likewise mentions) provided we may (with safety) restore the *Text*, as *Perrault* has attempted, by substituting *Levitatem*, for the Authors *Rigiditatem*, *Stubborn materials* being not so fit for that curious Art.

29. What most of the former enumerated kinds differ from the *Sallows*, is indeed not much considerable, they being generally useful for the same purposes; as *Boxes*, such as *Apothecaries*, and *Goldsmiths* use; for *Cart Saddle-trees*, yea *Gun-stocks*, and *Half-Pikes*, *Harrows*, *Shoe-makers Lasts*, *Heels*, *Clogs* for *Pattens*, *Forks*, *Rakes*, especially the *Tooths*, which should be wedg'd with *Oak*, but let them not be cut for this when the *Sap* is stirring, because they will shrink, *Pearches*, *Hop-poles*, *Ricing* of *Kidney-beans*, and for *Supporters* to *Vines*, when our *English Vineyards* come more in request: Also for *Hurdles*, *Sieves*, *Lattices*; for the *Turner*, *Kyele-pins*, great *Town-Topp*s; for *Platters*, little *Casks* and *Vessels*; especially to preserve *Verjuices* in, the best of any:  
Pales

*Pales* are also made of cleft *Willow*, *Dorsers*, *Fruit-baskets*, *Canns*, *Hives* for *Bees*, *Trenchers*, *Trays*, and for polishing and whetting *Table-Knives*, the *Butler* will find it above any *Wood* or *Whet-stone*; also for *Coals* and *Bavin*, not forgetting the fresh *boughs*, which of all the *Trees* in nature, yield the most chaff, and coolest *shade* in the hottest season of the day; and this *Umbrage* so wholesome, that *Physicians* prescribe it to *Feaverish* persons, permitting them to be plac'd even about their *Beds*, as a safe, and comfortable *refrigerium*. The *wood* being preserv'd dry, will dure a very long time; but that which is found wholly *putrifi'd*, and reduc'd to a loamy earth in the hollow trunks of *superannuated* *Trees*, is, of all other, the fittest to be mingl'd with fine *mould*, for the raising our choicest *Flowers*, such as *Anemonies*, *Ranunculus's*, *Auriculas*, and the like.

What would we more? low *Broom*, and *Sallows* wild,  
Or feed the *Flock*, or *Shepherds* shade, or *Field*  
*Hedges* about, or do us *Hony* yield.

*Quid majora sequor? Salices, humilesque genisse,  
Aut illa pecori frondem, aut pastoribus umbram  
Sufficiunt, superque satis, & pabula melli.*

Georg. 2.

30. Now by all these *Plantations* of the *Aquatic* *Trees*, it is evident, the *Lords* of *Moorish* *Commons*, and unprofitable *Wasts*, may learn some *Improvement*, and the neighbour *Bees* be gratified; and many *Tools* of *Husbandry* become much cheaper. I conclude, with the Learned *Stephanus's* note upon these kind of *Trees*, after he has enumerated the universal benefit of the *Salicetum*: *Nullius enim tutior redditus, minorisve impendii, aut tempestatis securior.*

## CHAP. XXI.

### *Of Fences, Quick-sets, &c.*

I. OUR main *Plantation* is now finish'd, and our *Forest* adorn'd with a just *variety*: But what is yet all this labour, but loss of *time*, and irreparable *expence*, unless our *young*, and (as yet) tender *Plants* be sufficiently *guarded* from all external *injuries*? for, as old *Tusser*,

*If Cattel, or Coney may enter to Crop,  
Young Oak is in danger of losing his Top.*

But with something a more polish'd *stile*, though to the same purpose, the best of *Poets*,

Plash Fences thy Plantation round about,  
 And whilst yet Young, be sure keep Cattel out;  
 Severeft Winters, scorching Sun infest, (left;  
 And Sheep, Goats, Bullocks, all young Plants mo-  
 Yet neither Cold, nor the hoar rigid Frost,  
 Nor Heat reflecting from the Rocky Coast,  
 Like Cattel Trees, and tender Shoots confound,  
 When with invenom'd Teeth the twigs they (wound.

Texenda sepes etiam, & pecus omne tenendum est:  
 Præcipue, dum frons tenera, imprudensque laborum,  
 Cui, super indignas hyemes, solemque potentem,  
 Sylvestres Uri assidue, capreaque sequaces  
 Illudunt: Pascuntur Oves, avidaque juvence.  
 Frigora nec tantum cana concretæ pruina,  
 Aut gravis incumbens scopulis aventibus aestas,  
 Quantum illi nocere greges, durique venenum  
 Dentis, & adorso signata in stirpe cicatrix.

Georg. 2.

2. For, the reason that so many complain of the improsperous condition of their *Wood-lands*, and *Plantations* of this kind, proceeds from this neglect; though (*Sheep* excepted) there is no employment whatsoever incident to the *Farmer*, which requires less expence to gratifie their expectations: One diligent, and skilful *Man* will govern five hundred Acres: But if through any accident a *Beast* shall break into his *Masters* Field; or the wicked *Hunter* make a Gap for his *Dogs* and *Horses*, what a clamor is there made for the disturbance of a years *Crop* at most in a little *Corn*? Whiles abandoning his young *Woods* all this time, and perhaps many years, to the venomous bitings and treading of *Cattel*, and other like injuries (for want of due care) the detriment is many times irreparable; Young *Trees* once cropp'd, hardly ever recovering: It is the bane of all our most hopeful *Timber*.

3. But shall I provoke you by an instance? A *Kinsman* of mine has a *Wood* of more than 60 years standing; it was, before he purchas'd it, expos'd and abandon'd to the *Cattel* for divers years: some of the outward skirts were nothing save shrubs and miserable sterulings; yet still the place was dispos'd to grow woody; but by this neglect continually suppress'd. The industrious *Gentleman* has Fenced in some Acres of this, and cut all close to the ground; it is come in eight or nine years, to be better worth than the *Wood* of sixty; and will (in time) prove most incomparable *Timber*, whiles the other (part so many years advanc'd) shall never recover; and all this from no other cause, than preserving it fenc'd: Judge then by this, how our *Woods* come to be so decry'd: Are five hundred *Sheep* worthy the care of a *Shepherd*? and are not five thousand *Oaks* worth the fencing, and the inspection of a *Hayward*?

And shall men doubt to Plant, and careful be?

Et dubitant homines serere, atque impendere curam?

Georg. 2.

Let us therefore shut up what we have thus laboriously Planted, with some good *Quick-set hedge*; Which,

—All Countries bear, in every ground  
 As Denizen, or Enter-loper found:  
 From Gardens and till'd fields expell'd, yet there;  
 On the extreams stands up, and claims a share.  
 Nor *Mastiff-dog*, nor *Pike-man* can be found  
 A better Fence to the enclosed Ground.  
 Such breed the rough and hardy Cantons rear,  
 And into all adjacent Lands prefer,  
 Though rugged Churles, and for the Battel fit;  
 Who Courts and States with Complement or Wit

—Omne solum natale est, intrat ubique  
 Ardalis; illa quidem cultis excluditur agris  
 Plerumque, atque hortis; sed circumsepit utrosque  
 Atque omnes aditus servat fidissima custos,  
 Utilior latrante cane, armatoque Priapo.  
 Aspera frigoribus saxisque Halvetia tales  
 Educat, & peregre terras emittit in omnes  
 Enormis durisque viros, sed fortia bello  
 Pectora; non illi cultu, non moribus Aulas,

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To civilize, nor to instruct pretend;  
But with stout faithful service to defend.  
This Tyrants know full well, nor more confide  
On Guards that serve less for Defence than Pride:  
Their Persons safe they do not judge amiss,  
And Realms committed to their Guard of Swiss.

Atque Urbes decorare valent, sed utraque fideli  
Deservunt opera; nec iis, gens cauta, Tyranni,  
Preponunt speciosa magis, multumque sonora  
Praefidia; his, certè vitam tentantur opesque, &c.

Coultii pl. l. 6.

For so the ingenious Poet has metamorphos'd him, and I could not withstand him.

4. The *Hei-thorne*, (*Oxyacantha vulgaris*) and indeed the very best of common hedges, is either rais'd of Seeds or Plants; but then it must not be with despair, because sometimes you do not see them peep the first year; for the *Haw*, and many other Seeds, being invested with a very hard Integument, will now and then suffer imprisonment two whole years under the earth; and our impatience at this, does often frustrate the resurrection of divers seeds of this nature; so as we frequently dig up, and disturb the beds where they have been sown, in despair, before they have gone their full time; which is also the reason of a very popular mistake in other Seeds: Especially, that of the *Holly*, concerning which there goes a tradition; that they will not sprout till they be pass'd through the *Maw* of a *Thrush*; whence the saying, *Turdus ex itinere suum cacat* (alluding to the *Viscus* made thereof, not the *Mistletoe* of *Oak*) but this is an error, as I am able to testify on experience; they come up very well of the *Berries*, treated as I have shew'd in Chap. 26. and with patience; for (as I affirm'd) they will sleep sometimes two entire years in their Graves; as will also the seeds of *Tew*, *Sloes*, *Phillyrea angustifolia*, and sundry others, whose shells are very hard about the small kernels; but which is wonderfully facilitated, by being (as we directed) prepar'd in beds, and Magazines of Earth, or Sand for a competent time, and then committed to the ground before the full in March, by which season they will be chitting, and speedily take Root: Others bury them deep in the ground all Winter, and sow them in February: And thus I have been told of a Gentleman who has considerably improv'd his Revenue, by sowing *Haws* only, and raising Nurseries of *Quick-sets*, which he sells by the hundred far and near: This is a commendable industry; any neglected corners of ground will fit this Plantation.

5. But *Columella* has another expedient for the raising of our *spinetum*, by rubbing the now mature *Hips* and *Haws*, into the crevices of *Bass-ropes*, and then burying them in a Trench: Whether way you attempt it, they must (so soon as they peep, and as long as they require it) be sedulously cleans'd of the weeds; which, if in beds for transplantation, had need be at the least three, or four years; by which time even your seedlings will be of stature fit to remove; for I do by no means approve of the vulgar premature Planting of *Setts*, as is generally us'd throughout England; which is to take such only as are the very smallest, and so to crowd them into three or four fies, which are both egregious mistakes.

6. Whereas it is found by constant experience, that Plants as big as *Ones Thumb*, set in the posture, and at the distance which we spake

spake of in the *Horn-beam*; that is, almost *perpendicular* (not altogether, because the *Rain* should not get in 'twixt the *Rind* and *wood*) and single, or at most, not exceeding a double *row*, do prosper infinitely, and much out-strip the densest, and closest ranges of our trifling *Sets*, which make but weak *shoots*, and whose roots do but hinder each other, and for being couch'd in that *posture*, on the sides of *Banks*, and *Fences* (especially where the earth is not very tenacious) are *bared* of the *mould* which should entertain them, by that time the *Rains*, and *Storms* of one *Winter* have passed over them. In *Holland*, and *Flanders* (where they have the goodliest *Hedges* of this kind about the *Counterscarps* of their invincible *fortifications*, to the great security of their *Musketers* upon occasion) they Plant them according to my description, and raise *Fences* so speedily, and so impenetrable, that our *best* are not to enter into the comparison. Yet, that I may not be wanting to direct such as either affect the other way, or whose *Grounds* may require some *Bank* of *Earth*, as ordinarily the verges of *Coppices*, and other Inclosures do: You shall by *line*, cast up your *foss* of about three foot broad, and about the same depth, provided your mould hold it; beginning first to turn the *surf*, upon which, be careful to lay some of the best *Earth* to bed your *Quick* in, and there *lay*, or *set* the *Plants*; *two* in a foot space is sufficient; being diligent to procure such as are *fresh* gathered, *freights*, *smooth*, and well *rooted*; adding now and then, at equal spaces of twenty, or thirty foot, a young *Oakling* or *Elm-sucker*, *Ash* or the like, which will come in time (especially in plain Countries) to be ornamental *Standards*, and good *Timber*: If you will needs multiply your rows, a *foot* or somewhat less: Above that, upon more congested mould, plant another rank of *sets*, so as to point just in the middle of the *vacuities* of the *first*, which I conceive enough: This is but for the single *Foss*; but if you would fortify it to the purpose, do as much on the other side, of the same *depth*, *height*, and *planting*; and then last of all, cap the top in *Pyramis* with the worst, or bottom of the *Ditch*: Some, if the *mould* be good, plant a row or two on the *Edge*, or very *crest* of the *mound*, which ought to be a little *flatted*: Here also many set their *dry-Hedge*, to defend, and shade their under-plantation, and I cannot reprove it: But great care is to be had in this *work*; that the main bank be well *footed*, and not made with too suddain a declivity, which is subject to fall in after *frosts* and *wet* weather; and this is good husbandry for *moist* grounds; but where the Land lies *high*, and is hot and *gravelly*, I prefer the lower fencing; which, though *even* with the *area* it self, may be protected with *stakes* and a dry hedge, the distance competent, and to very good purposes of educating more frequent *Timber* amongst the rows.

7. Your *Hedge* being yet *Young*, should be constantly *weeded* two or three years, especially before *Midsummer* (of *Brambles* especially, the great *Dock*, and *Thistle*, &c.) though some admit not of this work till after *Michaelmas*, for *Reasons* that I approve not: It has been the practice of *Herefordshire*, in the plantation of *Quick-*  
set-

*set-hedges*, to plant a *Crab-Stock* at every twenty foot distance; and this they observe so *Religiously*, as if they had been under some rigorous *Statute* requiring it: But by this means, they were provided in a short time with all advantages for the *grafting* of *Fruit* amongst them, which does highly recompense their industry. Some cut their *Sets* at *three* years growth even to the very ground, and find that in a *year* or *two*, it will have shot, as much as in *seven*, had it been let alone.

8. When your *Hedge* is now of near *six* years stature, *plash* it about *February* or *October*; but this is the work of a very dextrous, and skilful *Husbandman*; and for which our honest Country-man *Mr. Markham* gives excellent directions; only I approve not so well of his *deep-cutting*, if it be possible to bend it, having suffered in some thing of that kind: It is almost incredible to what perfection some have laid these *Hedges*, by the *rural* way of *plashing*, better than by *clipping*; yet may both be used for *ornament*, as where they are planted about our *Garden-fences*, and *fields* near the *Mansion*. In *Scotland*, by tying the young *shoots* with *bands* of *hay*, they make the *stems* grow so very close together, as that it encloseth *Rabbits* in *Warrens* instead of *pales*.

9. And now since I did mention it, and that most I find do greatly affect the vulgar way of *Quicking* (that this our *Discourse* be in nothing deficient) we will in brief give it you again after *Geo. Markham's* description, because it is the best, and most accurate, although much resembling our former *direction*, of which it seems but a *Repetition*, till he comes to the *plashing*. In a Ground which is more *dry* than *wet* (for *watry* places it abhors) plant your *Quick* thus: Let the first row of *Sets* be placed in a *trench* of about half a foot deep, *even* with the top of your *ditch*, in somewhat a sloping, or inclining posture: Then, having rais'd your *bank* near a foot upon them, plant another *row*, so as their tops may just peep out over the middle of the *spaces* of your *first* row: These cover'd again to the height or thickness of the other, place a third *rank* opposite to the *first*, and then finish your *bank* to its intended height. The distances of the *plants* would not be above one *foot*; and the *season* to do the work in, may be from the entry of *February*, till the end of *March*; or else in *September*, to the beginning of *December*. When this is finish'd, you must guard both the top of your *Bank*, and outmost verge of your *Ditch*, with a sufficient *dry-hedge*, interwoven from *stake* to *stake* into the earth (which commonly they do on the bank) to secure your *Quick* from the spoil of *Cattle*. And then being careful to repair such as decay, or do not spring, by supplying the dead, and trimming the rest; you shall after *three* years growth, sprinkle some *Timber-trees* amongst them; such as *Oak*, *Beech*, *Ash*, *Maple*, *Fruit*, or the like; which being drawn young out of your *Nurseries*, may be very easily inserted. But that which we affirm'd to require the greatest dexterity in this work, is, the artificial *plashing* of our *Hedge*, when it is now arriv'd to a *six*, or *seven* years head; though some stay till the *tenth*, or longer. In *February* therefore, or *October*, with a very sharp *hand-bill*,



*bill*, cut away all superfluous *sprays* and *straglers*, which may hinder your progress, and are useless. Then, searching out the principal *stems*, with a keen, and light *Hatchet*, cut them *slant-wise* close to the *Ground*, about three quarters through, or rather, so far only, as till you can make them comply handsomely, which is your best direction, and so lay it from your *sloping* as you go, folding in the lesser *branches* which spring from them; and ever within a five, or six foot distance, where you find an upright *set* (cutting off only the top to the height of your intended *hedge*) let it stand as a *stake*, to fortify your work, and to receive the *twinnings* of those branches about it. Lastly, at the *top* (which would be about *five foot* above ground) take the longest, most slender, and flexible *twigs* which you reserved (and being cut as the former, where need requires) bind in the extremities of all the rest, and thus your work is finish'd: This being done very close, and thick, makes an impregnable *Hedge*, in few years; for it may be repeated as you see occasion; and what you so cut away, will help to make your *dry-hedges* for your young *Plantations*, or be profitable for the *Oven*, and make good *Bavin*. For *stakes* in this work, *Oak* is to be preferr'd, though some will use *Elder*, but it is not good, or the *Black-Thorn*, *Crab-tree*, in moorish ground *Withy*, *Ash*, *Maple*, *Hazel*, but not lasting, driven well in at every *yard* of interval both before, and after they are bound, till they have taken the hard Earth, and are very fast; and even your *plash'd-hedges* need some small *thorns* to be lay'd over, to protect the *Spring* from *Cattel* and *Sheep*, till they are somewhat fortified; and the doubler the *winding* is lodg'd, the better; which should be beaten, and forced down together with the *stakes*, as equally as may be. Note, that in sloping your *Windings*, if it be too low done (as very usually) it frequently mortifies the tops; therefore, it ought to be so bent, as it may not impede the mounting of the *Sap*: If the *plash* be of a great, and extraordinary *age*, wind it at the neather boughs all together, and cutting the *sets* as directed, permit it rather to hang downwards a little, than rise too forwards; and then twist the branches into the work, leaving a *set* free, and unconstrain'd at every *yard* space, besides such as will serve for *stakes*, abated to about five-foot length (which is a competent stature for an *Hedge*) and so let it stand. One shall often find in this work, especially in *Old neglected Hedges*, some great *Trees*, or *stubs*, that commonly make *gaps* for *Cattel*: Such should be cut so near the Earth, as 'till you can lay them thwart, that the *top* of one, may rest on the *root*, or *stub* of the other, as far as they extend, stopping the *cavities* with its boughs and branches; and thus *Hedges* which seem to consist but only of *Scrubby-Trees* and *stumps*, may be reduc'd to a tolerable *Fence*. We have been the longer on these *descriptions*, because it is of main importance, and that so few *Husband-men* are perfectly skill'd in it: But he that would be more fully satisfied I would have to consult Mr. *Cook*, Chap. 32.

10. The *Root* of an *Old Thorn* is excellent both for *Boxes*, and *Combs*, and is curiously, and naturally wrought: I have read, that

that they made *ribs* to some small *Boats* or *Vessels* with the *White-Thorn*, and it is certain, that if they would plant them *single*, and in *standards*, where they might be safe, they would rise into large body'd Trees in time, and be of excellent use for the *Turner*, not inferior to *Box*.

The distill'd *water*, and *Stone*, or *kernels* of the *Haw* redukt to *powder*, is generally agreed to be *soverain* against the *Stone*. The *Black-Crab* rightly leason'd, and treated, is famous for *Walking-staves*, and if over-grown, us'd in *Mill-work* yea and for *Rafters* of great *Ships*. Here we owe due *Elogy* to the Industry of my Lord *Shaftsbury*, who has taught us to make such Enclosures of *Crab-Stocks* only, (planted close to one another) as there is nothing more impregnable and becoming; or you may sowe *Cider-kernels* in a *rill*, and fence it for a while, with a double *dry Hedge*; not only for a suddain, and beautiful, but a very profitable *Inclosure*; because, amongst other benefits, they will yield you *Cider-fruit* in abundance: But in *Devonshire*, they build two *walls* with their *stones*, setting them edgeways, *two*, and then *one* between; and so as it rises, fill the interval, or *Cofer* with Earth (the *breadth* and *height* as you please) and continuing the *stone-work*, and *filling*, and as you work beating in the *stones* flat to the sides, they are made to stick everlastingly: This is absolutely the neatest, most saving, and profitable *Fencing* imaginable, where *slaty stones* are in any abundance; and it becomes not only the most *secure* to the *Lands*, but the best for *Cattel*, to lye warm under the *Walls*; whilest other *Hedges*, (be they never so thick) admit of some cold *winds* in Winter time when the leaves are off. Upon these *Banks* they plant not only *Quick-sets*, but even *Timber-trees*, which exceedingly thrive, being out of all danger.

11. The *Pyracanth*, *Palinurus*, and like pretioufer sorts of *Thorne*, might easily be propagated by *Seeds*, *layers* or *cutting*, into plenty sufficient to store even these vulgar *Uses*, were *Men* industrious; and then, how beautiful, and sweet would the *environs* of our *Fields* be? for there are none of the *spinous shrubs* more hardy, nor fitter for our defence. Thus might *Berberies* now and then be also inserted among our *hedges*, which, with the *Hips*, *Haws*, and *Cornel-berries*, do well in *light lands*, and would rather be planted to the *South*, than *North* or *West*, as usually we observe them.

13. Some (as we noted) mingle their very *hedges* with *Oak-lings*, *Ash*, and *Fruit trees* sown, or planted, and 'tis a laudable improvement; though others do rather recommend to us *Sets* of all one sort, and will not so much as admit of the *Black-Thorne* to be mingled with the *White*, because of their unequal progress; and indeed, *Timber-trees* set in the *Hedge* (though *contemporaries* with it) do frequently wear it out; and therefore I should rather encourage such *Plantations*, to be at some *Tards* near the *Verges*, than *perpendicularly* in them. Lastly if in planting any the most robust *Forest-Trees*, (especially *Oak*, *Elms*, *Chestnut*) at competent spaces, and in *rows*; you open a *Ring* of ground, at about  
O
four

four foot distance from the *stem*, and prick-in *quick-set* plants; you may after a while, keep them *clip'd*, at what height you please; They will appear exceedingly beautiful to the Eye, prove a good fence, and yield useful *busb, hawin*, and (if you maintain them unthorn) *Hips*, and *Haws* in abundance: This would therefore especially be practis'd, where one would invite the *Birds*.

14. In *Cornwal* they secure their *Lands* and *Woods*, with high *Mounds*, and on them they plant *Acorns*, whose roots bind in the looser mould, and so form a double, and most durable *Fence*, incircling the *Fields* with a *Coronet* of *Trees*. They do likewise (and that with great commendation) make *hedges* of our *Genista spinosa*, prickly *Furzes*, of which they have a taller sort, such as the *French* imploy for the same purpose in *Bretaigne*, where they are incomparable *husbands*.

15. It is to be *sown* (which is best) or *planted* of the *roots* in a furrow: If *sown*, *weeded* till it be strong: both *Tonfle*, and to be diligently *clip'd*, which will render it very thick, an excellent and beautiful *hedge*: Otherwise, permitted to grow at large, 'twill yield very good *Fagot*: It is likewise admirable *Covert* for *wild-fowle*, and will be made to grow even in moist, as well as dry places: The young, and tender tops of *Furzes*, being a little bruised, and given to a lean, sickly *Horse*, will strangely recover and plump him. Thus, in some places, they *sow* in *barren grounds* (when they lay them down) the last *crop* with this *seed*, and so let them remain till they break them up again, and during that interim, reap considerable advantage: Would you believe (writes a worthy *Correspondent* of mine) that in *Herefordshire* (famous for plenty of *wood*) their *Thickets* of *Furzes* (*viz.* the *vulgar*) should yield them more *profit* than a like quantity of the best *Wheat* land of *England*? for such is theirs; If this be question'd, the *Scene* is within a mile of *Hereford*, and proved by *anniversary* experience, in the *Lands*, as I take it, of a *Gentleman* who is now one of the *Burgesses* for that *City*. And in *Devonshire* (the *seat* of the best *Husbands* in the *World*) they *sow* on their worst *Land* (*well plow'd*) the *seeds* of the rankest *Furzes*, which in four, or five years becomes a rich *Wood*: no provender (as we say) makes *Horses* so hardy, as the young *tops* of these *Furzes*; no other *Wood* so thick, nor more excellent *Fuel*; and for some purposes also, yielding them a kind of *Timber* to their more humble *buildings*, and a great refuge for *Fowl* and other *Game*: I am assur'd, in *Bretaigne* 'tis sometimes *sown* no less than *twelve yards* thick, for a speedy, profitable, and impenetrable *Mound*: If we imitated this *husbandry* in the barren places of *Surrey*, and other parts of this *Nation*, we might exceedingly spare our *woods*; and I have bought the best sort of *French-seed* at the shops in *London*. It seems that in the more *Eastern* parts of *Germany*, and especially in *Poland*, this *vulgar* trifle, and even our common *Broom* is so rare, that they have desired the *seeds* of them out of *England*, and preserve them with extraordinary care in their best *Gardens*; this I learn out of our *Johnsons Herbal*; by which we may consider, that what is reputed a *curse*,  
and



and a cumber in some places, is esteem'd the ornament and blessing of another: But we shall not need go so far for this, since both *Beech*, and *Birch* are almost as great strangers in many parts of this Nation, particularly *Northampton*, and *Oxfordshire*. Mr. Cook is much in praise of *Juniper* for hedges, especially for the more elegant *Incofures*.

15. This puts me in mind of the *Genista Scoparia*, Broom; Broom. another improvement for Barren grounds, and savor of more substantial Fuel: It may be sown *English*, or (what is more sweet, and beautiful) the *Spanish*, with equal success. In the Western parts of *France*, and *Cornwal*, it grows with us to an incredible height (however our Poet give it the epithete of *humilis*) and so it seems they had it of old, as appears by *Gratius* his *Genista Altinates*, with which (as he affirms) they us'd to make staves for their *Spears*, and hunting *Darts*. The Seeds of Broom Vomit, and Purge, whilst the Buds, and Flowers being pick'd, are very grateful.

16. Lastly, (*Sambucus*) a considerable Fence may be made of Elder. the Elder, set of reasonable lusty trunchions; much like the *Willow*, and (as I have seen them maintain'd) laid with great curiosity, and far excelling those extravagant plantations of them about *London*, where the lops are permitted to grow without due, and skilful laying. There is a sort of Elder which has hardly any Pith; this makes exceeding stout Fences, and the Timber very useful for Cogs of Mills, Butchers Skewers, and such tough employments. Old trees do in time become firm, and close up the hollownes to an almost invisible pith. But if the Medicinal properties of the Leaves, Bark, Berries, &c. were thoroughly known, I cannot tell what our Country-man could aile, for which he might not fetch a Remedy from every Hedge, either for Sicknes or Wound: The inner Barke of Elder, apply'd to any burning, takes out the fire immediately; That, or, in season, the Buds, boyl'd in Water-grewel for a Break-fast, has effected wonders in the Fever; and the decoction is admirable to assuage Inflammations and tetrous humors, and especially the *Scorbut*: But an Extract, or Theriaca may be compos'd of the Berries, which is not only efficacious to eradicate this Epidemical inconvenience, and greatly to assist Longevity (so famous is the story of *Neander*) but is a kind of Catholicon against all Infirmities whatever; and of the same Berries is made an incomparable Spirit, which drunk by it-self, or mingled with Wine, is not only an excellent drink, but admirable in the Dropsy; In a Word, The Water of the Leaves and Berries, are approved in the Dropsy, every part of the Tree is useful, as may be seen at large, in *Blockwitzius's Anatomie* thereof. The Oyntment made with the young buds, and leaves in May with Butter, is most sovereign for Aches, shrunk Sinews, Hemorrhoids, &c. and the Flowers macerated in Vingar, not only are of a grateful relish, but good to attenuate and cut raw, and gross humors. And less than this could I not say (with the leave of the charitable Physician) to gratifie our poor Wood-man; and yet when I have said all this, I do by no means

means commend the *scent* of it, which is very noxious to the *Air*, and therefore, though I do not undertake that all things which sweeten the *Air*, are salubrious, nor all ill favors pernicious; yet, as not for its beauty, so neither for its smell, would I plant *Elder*, or much *Box* near my Habitation, since we learn from *Biesius*, that a certain house in *Spain*, seated amongst many *Elder-trees*, diseas'd, and kill'd almost all the *Inhabitants*, which when at last they were grub'd up, became a very wholesome, and healthy place. The *Elder* does likewise produce a certain green *Fly*, almost invisible, which is exceedingly troublesome, and gathers a fiery redness where it attacks.

*Bies. de Aeris  
potestate.*

*Evonymus*

19. There is a *Shrub* call'd the *Spindle-tree*, (*Evonymus*, or *Fusanum*) commonly growing in our *Hedges*, which bears a very hard wood, of which they sometimes made *Bowes* for *Viols*, and the *In-layer* us'd it for its colour, and *Instrument-makers* for *Tooth-ing* of *Organs*, and *Virginal-keys*, *Tooth-pickers*, &c. What we else do with it I know not, save that (according with its name, *abroad*) they make *spindles* with it. I also learn that three, or four of the *Berries*, purge both by *Vomit*, and *stige*, and the *powder* kills *Nits*, and *Scurfy heads*. Here might come in (or be nam'd at least) the *Wild-Cornel*, or *Dog-wood*, good to make *Mill-Cogs*, *Pestles*, *Bobins* for *Bonelace*, *Butchers Skewers*, &c. Lastly, the *Viburnum*, or *Way-faring tree*, growing also plentifully in every corner, makes the most plyant, and best *bands* to *Fagot* with. The *Leaves*, and *Berries* are *astringent*, and make an excellent *Gargle* for *loose Teeth*, *sore Throats*, and stop *Fluxes*: The *leaves* decocted to a *Lie*, not only colour the *hairs* black, but fasten their *Roots*; and the *Bark* of the *Root*, macerated under ground, well beaten, and often boil'd, serves for *Birdlime*.

*Cornel.*

*Tucca.*

20. The *American Tucca* is a *hardier* plant than we take it to be; for it will suffer our sharpest *Winter*, as I have seen by experience, without that trouble, and care of setting it in *Cases* in our *Conservatories* for *hyemation*; such as have beheld it in *Flower* (which is not indeed till it be of some age) must needs admire the beauty of it; and it being easily multiplied, why should it not make one of the best, and most ornamental *Fences* in the world for our *Gardens*, with its natural *Palisadoes*, as well as the more tender, and impatient of moisture, the *Aloes*, does for their *Vineyards* in *Languedoc*, &c. but We believe nothing *improvable*, save what our *Grand-fathers* taught us. Finally, let trial likewise be made of that *Thorn*, mention'd by *Cap. Liggon* in his *History* of *Barbadoes*; whether it would not be made grow amongst us, and prove as convenient for *fences* as *there*; the *Seeds*, or *Sets* transported to us with due care. And thus, having accomplish'd what (by your *Commands*) I had to offer concerning the *propagation* of the more *Solid*, *Material*, and useful *Trees*, as well the *Dry*, as *Aquatical*; and to the best of my *talent* fenc'd our *Plantation* in, I should here *conclude*, and set a *bound* likewise to my *Discourse*, by making an *Apologie* for the many *errors* and *impertinencies* of it; did not the *zeal*, and *ambition* of this *Illustrious Society* to promote, and improve

improve all *Attempts* which may concern *Publick utility* or *Ornament*, persuade *Me*, that what I am adding for the farther encouragement to the *planting* of some other *useful* (though less *Vulgar*) *Trees*, will at least obtain your *pardon*, if it miss of your *Approbation*.

21. To discourse in this *style* of all such *Fruit-trees* as would prove of greatest *emolument* to the whole *Nation*, were to design a just *Volume*; and there are *directions* already so many, and so accurately deliver'd and *publish'd* (but which cannot be affirm'd of any of the former *Classes* of *Forest-trees*, and other remarks, at the least to my poor knowledge and research) that it would be needless to *Repeat*.

22. I do only wish (upon the prospect, and meditation of the universal *Benefit*) that every *person* whatsoever, worth *ten pounds per annum*, within his *Majesties* Dominions, were by some indispensible *Statute*, oblig'd to plant his *Hedge-rows* with the best and most useful *kinds* of them; especially, in such places of the *Nation*, as being the more in-land *Counties*, and remote from the *Seas*, and Navigable *Rivers*, might the better be excus'd from the planting of *Timber*, to the proportion of those who are more happily, and commodiously *situated* for the *transportation* of it.

22. Undoubtedly, if this course were taken effectually, a very considerable part both of the *Meat*, and *Drink* which is spent to our prejudice, might be saved by the *Country-people*, even out of the *Hedges* and *Mounds*, which would afford them not only the pleasure, and profit of their delicious *Fruit*, but such abundance of *Cider*, and *Perry*, as should suffice them to *drink* of one of the most wholesome, and excellent *Beverages* in the *World*. Old Gerard did long since alledge us an *example* worthy to be pursu'd; I have seen (saith he, speaking of *Apple-Trees*, lib. 3. cap. 101.) in the *Pastures*, and *Hedge-rows* about the *Grounds* of a *Worshipful* Gentleman dwelling two miles from Hereford, call'd Mr. Roger Bodnome, so many *Trees* of all sorts, that the *Servants* drink for the most part no other drink but that which is made of *Apples*. The quantity is such, that by the report of the Gentleman himself, the *Parson* hath for Tythe many *Hogsheads* of *Cider*: The *Hogs* are fed with the fallings of them, which are so many, that they make choice of those *Apples* they do eat, who will not taste of any but of the best. An *Example* doubtless to be followed of *Gentlemen* that have *Land* and *Living*; but *Envy* saith, The *Poor* will break down our *Hedges*, and we shall have the least part of the *Fruit*; but forward in the Name of God, *Graft*, *Set*, *Plant*, and *nourish up* *Trees* in every corner of your *Ground*; the labour is small, the cost is nothing, the commodity is great; your selves shall have plenty, the poor shall have somewhat in time of want to relieve their necessity, and God shall reward your good minds and diligence. Thus far honest Gerard. And in truth, with how small a charge, and infinite pleasure this were to be effected, every one that is *Patron* of a little *Nursery*, can easily calculate: But by this *Expedient*, many thousands of *Acres*, sow'd now yearly with *Barley*, might be cultivated



vated for *Wheat*, or converted into *Pasture*, to the increase of *Corn*, and *Cattle*: Besides, the *Timber* which the *Pear-tree*, *Black-Cherry* afford, and many thorny *plums* (which are best for *grain*, *colour*, and *gloss*) afford, comparable (for divers curious *Uses*) with any we have enumerated. The *Black-Cherry-Wood* grows sometimes to that bulk, as is fit to make *Stools* with, *Cabinets*, *Tables*, especially the redder sort, which will polish well; also *Pipes*, and *Musical Instruments*, the very *bark* employ'd for *Bee-Hives*: But of this I am to render a more ample *Account*, in the *Appendix* to this *Discourse*. I would farther recommend the more frequent planting, and propagation of *Fir*, *Pine-trees*, and some other beneficial *Materials*, both for *Ornament* and *profit*; especially, since we find by *experience*, they thrive so well, where they are cultivated for *Curiosity* only.

## C H A P. XXII.

### Of the Fir, Pine, Pinafter, Pitch-tree, &c.

*Fir.*

1. **A** *Bies*, *Pinus*, *Pinafter*, *Picea*, &c. are all of them easily rais'd of the *Kernels*, and *Nuts*, which may be gotten out of their *Cones* and *Clogs*, by exposing them a little before the *fire*, or in *warm water*, till they begin to gape, and are ready to deliver themselves of their numerous burthen.

2. There are of the *Fir* two principal *species*; the *Male*, which is the bigger Tree, most beautiful and tapering, and of a harder wood, and more hirsute *leaf*; and one sort which they call the *Spanish Fir*, bears its *leaf* like *Rosemary* with a white rib underneath, and this I suppose to be the *Female*, which is much the softer, and whiter. Though *whiteness* be not the best *character*. That which knowing *Workmen* call the *Dram*, and that comes to us from *Bergen*, *Swinfoud*, *Moss*, *Longlound*, *Dranton*, &c. long, straight, clear, and of a yellow more *Cedrie* colour, is esteemed much before the *White* for *flooring* and *wainscot*; For *Masts*, &c. those of *Prussia*, which we call *Spruce*, and *Norway* (especially from *Gottenberg*) are the best; unless we had more commerce of them from our *Plantations* in *New-England*, which are preferable to any of them; there lying rotting at present at *Pascataway*, a *Mast* of that prodigious dimensions, as no body will adventure to ship, and bring away.

The *Hemlock-tree* (as they call it in *New-England*) is a kind of *Spruce*: In the *Scottish Highlands* are *Trees* of wonderful altitude (though not altogether so tall, thick, and fine as the former) which grow upon places so inaccessible, and far from the *Sea*, that (as one says) they seem to be planted of *God* on purpose for *Nurseries* of *Seed*, and monitors to our *Industry*, reserved with other *Blessings*,

sings, to be discover'd in our days amongst the new-invented *Improvements* of Husbandry, not known to our *Southern* people of this *Nation*, &c. Did we consider the pains they take to bring them out of the *Alps*, we should less stick at the difficulty of transporting them from the utmost parts of *Scotland*. To the former sorts we may add the *Esperund Fir*, *Tonsberry*, *Fredrickstad*, *Helleroné*, *Holmstrand*, *Landifer*, *Stavenger*, *Lawrmat*, &c. There is likewise a kind of *Fir*, call'd in *Dutch* the *Green-boome*, much us'd in building of *Ships*, though not for *Men of War*; because of its lightness, and that it is not so strong as *Oak*; but yet proper enough for *Vessels* of great burden, and which stand much out of the *Water*: This sort comes into *Holland* from *Norway*, and other *Eastland* Countries; It is somewhat heavier yet than *Fir*, and stronger, nor do either of them bend sufficiently: As to the *Seeds*, they may be sown in *beds*, or *cases*, at any time during *March*; and when they peep, carefully defended with *Furzes*, or the like fence, from the rapacious *birds*, which are very apt to pull them up, by taking hold of that little *infecund* part of the seed, which they commonly bear upon their tops: The *Beds* wherein you sow them, had need be shelter'd from the *Southern Aspects*, with some *skreen* of *Reed*, or thick *hedge*: Sow them in shallow *rills*, not above half-inch-deep, and cover them with fine light mould: Being risen a finger in height, establish their weak *stalks*, by sifting some more earth about them; especially the *Pines*, which being more *top-heavy*, are more apt to swag. When they are of two, or three years growth, you may *transplant* them where you please; and when they have gotten good root, they will make prodigious shoots, but not for the three, or four first years comparatively. They will grow both in moist, or barren *Gravel*, and poor ground, so it be not over *sandy* and light, and want a *loamy* ligature; but before sowing (I mean *here* for large designs) turn it up a foot deep, sowing, or setting your *Seeds* an hand distance, and riddle Earth upon them; In five, or six weeks they will peep: When you *transplant*, water them well before, and cut the *clod* out about the *root*, as you do *Melons* out of the *Hot-bed*, which knead close to them like an *Egg*: Thus they may be sent safely many *miles*, but the *top* must neither be bruised, much less cut, which would *dwarf* it for ever: One kind also will take of *slips* or *layers* inter'd about the latter end of *August*, and kept moist.

3. The best time to transplant, were in the beginning of *April*; they would thrive mainly in a stiff, hungry *Clay* or rather *loam*; but by no means in over light, or rich *Soyl*: Fill the holes therefore with such barren *Earth*, if your ground be improper of it self; and if the *Clay* be too stiff, and untractable, with a little *sand*, removing with as much *Earth* about the *roots* as is possible, though the *Fir* will better endure a naked *transplantation*, than the *Pine*: If you be necessitated to plant towards the latter end of *Summer*, lay a pretty deal of horse *litter* upon the surface of the ground, to keep off the heat, and in *Winter* the cold; but let no *dung* touch either stem, or root: You may likewise sow in such earth about

February,

February, they will make a shoot the very *first* year of an *Inch*; next an handful, the *third* year three foot, and thence forward, above a yard annually. A *Northern Gentleman* (who has oblig'd me with this *process* upon his great *Experience*) assures me, that there are trees planted in *Northumberland*, which are in few years grown to the magnitude of *Ship-masts*; and from all has been said, deduces these *Incouragements*; 1. The facility of their *propagation*; 2. The nature of their *growth*, which is to affect places where nothing else will thrive: 3. Their *uniformity* and beauty, 4. Their perpetual *Verdure*; 5. Their *sweetness*, 6. Their *Fruitfulness*, affording *seed*, *gum*, *fuel*, and *timber* of all other woods the most useful, and easy to *work*, &c. All which highly recommend it as an excellent *Improvement* of *Husbandry*, fit to be enjoyn'd by some solemn *Edict*, to the *Inhabitants* of this our *Island*, that we may have *masts*, and those other *materials* of our own growth.

Pines.

4. The *Pine* (of which are reckon'd no less than *ten* several sorts, preferring the *Domestic*, or *Sative* for the fuller growth) is likewise of both *Sexes*, whereof the *Male* growing lower, hath its *wood* more knotty, and rude than the *Female*. They would be gather'd in *June*, before they gape, yet having hung *two* years (for there will be always some *ripe*, and some *green* on the same *Tree*) preserve them in their *nuts*, in *Sand*, as you treat *Acorns*, &c. till the season invite, and then *set*, or *sow* them in *Ground* which is cultivated like the *Fir*, in most respects; only, you may bury the *Nuts* a little deeper. By a *friend* of mine, they were rolled in a fine *compost* made of *Sheeps dung*, and scatter'd in *February*, and this way never fail'd *Fir* and *Pine*; they came to be above *Inch* high by *May*; and a *Spanish Author* tells us, that to *macerate* them five days in a *childs urine*, and three days in *water*, is of wonderful effect; This were an expeditious *process* for great *Plantations*; unless you would rather set the *Pine* as they do *Pease*, but at wider distances, that when where is occasion of removal, they might be taken up with *ease* and all, I say, *taken up*, and not remov'd by *Evulsion*; because they are (of all other *Trees*) the most obnoxious to miscarry without this caution; and therefore it were much better (where the *Nuts* might be commodiously set, and *defended*) never to *remove* them at all, it gives this *Tree* so considerable a check. The safest course of all, were to set the *Nuts* in an *Earth-pot*, and in frosty weather, shewing it a little to the *fire*, the *intire Clod* will come out with them, which are to be reserved, and set in the *naked Earth*, in convenient and fit *holes* prepar'd before hand, or so soon as the *thaw* is universal: Some commend the strewing a few *Oats* at the bottom of the *fosses* or *pits* in which you transplant the *naked roots*, for a great promotement of their taking, and that it will cause them to shoot more in *one* year than in *three*; but to this I have already spoken.

5. I am assur'd (by a person most worthy of credit) that in the *Territory* of *Alzey* (a Country in *Germany*, where they were miserably distressed for *Wood*, which they had so destroy'd as that they were reduced to make use of *Straw* for their best *Fuel*) a  
very



very large *Tract* being newly plowed, but the *Wars* surprizing them, not suffer'd to sow, there sprung up the next year a whole Forest of *Pine-trees*, of which sort of *Wood* there was none at all, within less than *four-score* miles; so as 'tis verily conjectur'd by some, they might be waisted thither from the Country of *Westraffa*, which is the nearest part to that where they grow: If this be true, we are no more to wonder, how, when our *Oak-woods* are grubb'd up, *Beech*, and Trees of *other kinds*, have frequently succeeded them: What some impetuous *Winds* have done in this nature, I could produce instances almost *miraculous*: I shall say nothing of the opinion of our Master *Varro*, and the learned *Theophrastus*, who were both of a faith, that the *seeds* of *Plants* drop'd out of the *Air*: *Pliny* in his 16. *Book*, *Chap.* 33. upon discourse of the *Cretan Cypress*, attributes much to the *indoles*, and nature of the *soil*, *virtue* of the *Climate*, and *Impressions* of the *Air*: And indeed it is very strange, what is affirm'd of that *Pitchy-rain*, (reported to have fallen about *Cyrene*, the year 430. U. C.) after which, in a short time, sprung up a whole wood of the Trees of *Lasertium*, producing a precious *Gum*, not much inferiour to *Benzoin*, if at least the *story* be warrantable: But of these *Aerial irradiations*, various *conceptions*, and *equivocal* productions without *seed*, &c. upon another occasion, if life and leisure permit me to finish what has been long under the hand and file, to gratifie our *Horticultores*; this present *Treatise* being but an imperfect limb, of that more ample *Work*.

6. In transplanting of these *Coniferous* Trees, which are generally *Resinaceous*, *viz.* *Fir*, *Pine*, *Larix*, *Cedar*, and which have but thin, and single *Roots*, you must never diminish their *heads*, nor be at all busie with their *roots*, which pierce deep, and is all their foundation, unless you find any of them bruised, or much broken; therefore such down right *Roots* as you may be forc'd to cut off, it were safe to scar with an *hot Iron*, and prevent the danger of bleeding, to which they are obnoxious even to destruction, though unseen, and unheeded: Neither may you *disbranch* them, but with great caution, as about *March*, or before, or else in *September*, and then 'tis best, to prune up the *side-branches* close to the *Trunk*, cutting off all that are above a year old; if you suffer them too long, they grow too big, and the *cicatrice* will be more apt to spend the *Tree* in *gumme*; upon which accident, I advise you to rub over their *wounds* with a mixture of *Cow-dung*; the neglect of this cost me dear, so apt are they to spend their *Gum*. Some advise us to break the shells of *Pines*, to facilitate their *delivery*, and I have essay'd it, but to my loss; *Nature* does *obstetricate*, and do that office of her self, when it is the proper season; neither does this preparation at all prevent those which are so buried, whiles their hard *Integuments* protect them both from *rotting*, and the *Vermine*.

7. The *domestic Pine* grows very well with us, both in *Mountains*, and *Plains*; but the *Pinafter*, or wilder (of which are four sorts) best for *Walks*; because it grows tall, and proud, maintain-  
P
ing

ing their Branches at the sides, which the *Pine* does less frequently. There is in *New-England*, a very broad *Pine*, which increaseth to a wonderful bulk and magnitude, insomuch as large *Canoos* have been excavated out of the body of it, without any addition.

8. The *Fir* growstallest, being planted reasonable close together; but suffers nothing to thrive under them. The *Pine* not so inhospitable; for (by *Plinies* good leave) it may be sown with any Tree, all things growing well under its shade, and excellent in Woods; hence *Claudian*,

The friendly *Pine* the mighty *Oak* invites.

*Et comitem quercum Pinus amica trahit.*

9. They both affect the cold, high, and rocky grounds, *Abies* in montibus altis; Those yet which grow on the more Southern, and less expos'd quarters, a little visited with the beams of the Sun, are found to thrive beyond the other, and to afford better Timber; and this was observ'd long since by *Vitruvius* of the *Infernates* (as he calls them) in comparison with the *Supernates*, which growing on the Northern and shady side of the *Apennines*, were nothing so good, which he imputes to the want of due digestion. They thrive (as we said) in the most sterile places, yet will grow in better, but not in over-rich, and pinguid. The worst Land in *Wales* bears (as I am told) large *Pines*; and the *Fir* according to his aspiring nature, loves also the Mountain more than the Valley; but ἐν τοῖς πάλαισις ὄρεσι ἐκείναις, It cannot endure the shade, as *Theophrastus* observes, de Pl. l. 4. c. 1. But this is not rigidly true; for they will grow in Consort, till they even shade, and darken one another, and will also descend from the Hills, and succeed very well, being desirous of plentiful waterings, till they arrive to some competent stature; and therefore they do not prosper so well in an over sandy, and hungry Soil, or gravel, as in the very entrails of the Rocks, which afford more drink to the Roots, that penetrate into their meanders, and winding recesses. But though they require this refreshing at first, yet do they perfectly abhor all stercoration; nor will they much endure to have the earth open'd about their Roots for Ablaqueation, or be disturb'd: This is also to be understood of *Cypresse*. A *Fir* for the first half dozen years, seems to stand, or at least make no considerable advance; but it is when thoroughly rooted, that it comes away miraculously. That Honourable Knight Sir Norton Knatchbull (whose delicious Plantation of *Pines*, and *Firs* I beheld with great satisfaction) having assur'd me that a *Fir-tree* of his raising, did shoot no less than sixty foot in height, in little more than twenty years; and what are extant at Sir Peter Wentworths of Lillingston Lovel; Cornbury in Oxfordshire, and other places; but especially those Trees growing now in Harefield Park in the County of Middlesex (belonging to Mr. Serjeant Nudigate) where there are two Spanish, or Silver *Firs*, that at two years growth from the seed, being planted there Anne 1603. are now become goodly *Masts*: The biggest of them from the ground, to the upper bough, is 81 feet, though forked on the top, which has not a little impeded its growth: The Girt, or Circumference

conference below, is *thirteen foot*, and the length (so far as is *Timber*, that is, to *six inches square*) *73 foot*, in the middle *17 Inches square*, amounting by calculation to *146 foot* of good *Timber*: The other *Tree* is indeed not altogether so large, by reason of its standing near the *House* when it was *burnt* (about *22 years* since) when one side of the *Tree* was scorched also; yet it has not only recover'd that scar, but thrives exceedingly, and is within eight or nine *foot*, as tall as the other, and would probably have been the better of the *two*, had not that impediment happen'd, it growing so taper, and erect, as nothing can be more beautiful: *This* I think (if we had no other) is a pregnant instance, as of the speedy growing of that *material*; so of all the encouragement I have already given for the more frequent cultivating this ornamental, useful, and profitable *Tree*, abounding doubtless formerly in this *Country* of ours, if what a grave, and authentick *Author* writes be true, *Athenaus* relating, that the stupendious *Vessel*, built so many ages since by *Hiero*, had its *Mast* out of *Britain*. Take notice that none of these *mountainous Trees* should be planted deep; but as *shallow* as may be for their competent support.

10. The *Picea* is another sort of *Pine*, and to be cultivated like it, the *cold ground* which these *Plants* most affect, though it be hard to discover,

Yet sometimes *Pitch-trees* and the noxious *Yew*,  
Or the dark *Ivy* will dire Symptoms shew.

—*Picea tantum, taxique nocentes*  
*Interdum, aut edere pandunt Vestigia nigra.*

Geor. 2.

And therefore I am not satisfied why it might not prosper in some tolerable degree in *England*, as well as in *Germany*, *Russia*, the *Colder Tracts*, and abundantly in *France*: It grows on the *Alpes* among the *Pine*, but neither so tall, nor so upright, and produces a *Gum* almost as white, and firm as *Frankincense*: But it is the *Larix* (another sort of *Pine*) that yields the true *Venetian Turpentine*.

11. There is also the *Piceaster* (a wilder sort) out of which the greatest store of *Pitch* is boyl'd. The *Teda* likewise, which is a sort abounding in *Dalmatia*, more unctuous, and more patient of the warmer situations, and so inflammable, that it will slit into *Candles*, and therefore some will by no means admit it to be of a different *Species*, but a *metamorphosis* of over-grown fattiness, to which the most judicious incline. But of these, the *Grand Canaries* (and all about the Mountains near *Tenariff*) are full, where the Inhabitants do usually build their *Houses* with the *Timber* of the *Pitch-Tree*; They cut it also into *Wainscot*, in which it succeeds marvellously well; abating that it is so obnoxious to *firing*, that when ever a house is attack'd, they make all imaginable halt out of the Conflagration, and almost despair of extinguishing it: They there also use it for *Candle-Wood*, and to travel in the night by the light of it, as we do by *Links*, and *Torches*; nor do they make these *Tees* (as the *Spaniards* call them) of the Wood of *Pine* alone, but of other *Trees*, as of *Oak*, and *Hasel* which they



cleave and hack, and then *drie* in the *Oven*, or *Chimney*, but have certainly some unctuous, and inflammable matter, in which they afterwards dip it; but thus they do in *Biscay*, as I am credibly inform'd.

12. The *Bodies* of these being cut, or burnt down to the ground, will emit frequent *Suckers* from the *Roots*; but so will neither the *Pine*, nor *Fir*: But the *Fir* may be propagated of *Layers*, which I divulge, as a considerable *Secret* that has been essay'd with success.

13. That all these, especially the *Fir*, and *Pine*, will prosper well with us, is more than probable, because it is a kind of *Demonstration*, that they did heretofore grow plentifully in *Cumberland*, *Cheshire*, *Stafford*, and *Lancashire*, if the multitudes of these *Trees* to this day found intire, and buried under the *Earth*, though suppos'd to have been o'rethrown, and cover'd so ever since the universal *Deluge*, be indeed of this *Species*: The Learned Dr. *Merrett*, in his *Pinax*, speaks of several places of this *Nation*, where *Subterraneous-Trees* are found; as namely, in *Cornwal*, *ad finem terræ*, in *agris Flints*; in *Penbroke-shire* towards the shore, where they so abound, *ut totum littus* (says the Doctor) *tanquam Sylva cadua apparet*; in *Cheshire* also (as we said) *Cumberland*, and *Anglesey*, and several of our *Euro-boreal* tracts, and are called *Noahs-Ark*. By *Chatnesse* in *Lancashire* (says *Cambden*) the low *Mossie* ground was no very long time since, carried away by an impetuous *flood*, and in that place now lies a low irriguous *Vale*, where many prostrate *Trees* have been digged out: And from another I receive, that in the *Moors* of *Somersetshire* (towards *Bridgewater*) some lengths of *Pasture* growing much wither'd, and parched more than other places of the same ground, in a great drowth, it was observ'd to bear the length, and shape (in gross) of *Trees*; They digg'd, and found in the spot *Oaks*, as black as *Ebony*, and have been from hence instructed, to take up many hundreds of the same kind: This might be of good use for the like detections in *Essex*, *Lincoln-shire*, and places either low situate, or adjacent to the *Sea*; also at *Binfield* heath in *Kent*, &c. These *Trees* were (some think) carried away in times past, by some accident of *Inundation*, or by *Waters* undermining the ground, till their own weight, and the *Winds* bow'd them down, and overwhelm'd in the *Mud*: For 'tis observ'd, that these *Trees* are no where found so frequently, as in *Boggie* places; but that the burning of these *Trees* so very bright, should be an *Argument* they were *Fir*, is not necessary, since the *Bituminous* quality of such *Earth*, may have imparted it to them; and *Cambden* denies them to be *fir-trees*, suggesting the *Querie*; Whether there may not possibly grow *Trees* even under the *Ground*, as well as other things? There are in *Cumberland*, on the *Sea-shore*, *Trees* sometimes discover'd at *Low-water*, and at other times that lye buried in the *Sand*; and in other *Mossie* places of that *County*, 'tis reported, the *People* frequently dig up the *Bodies* of vast *Trees* without *Boughs*, and that by direction of the *Dew* alone in *Summer*; for they observe

observe it never lyes upon that part, under which those Trees are interr'd. These particulars I find noted by the Ingenious *Author* of the *Britannia Baconica*. How vast a *Forest*, and what goodly *Trees* were once standing in *Holland*, and those *Low-countries*, till about the Year 860, that an *Hurricane* obstructing the mouth of the *Rhine* near *Catwic*, made that horrid devastation, good *Authors* mention; and they to this day find monstrous bodies, and branches, (nay with the very *Nuts*, most intire) of prostrate, and buried *Trees*, in the *Veene*, especially towards the *South*, and at the bottom of the Waters: Also near *Bruges* in *Flanders*, whole *Woods* have been found twenty Ells deep, in which the *Trunks*, *Boughs*, and *Leaves* do so exactly appear, as to distinguish their several Species, with the Series of their *Leaves* yearly falling; of which see *Boetius de Boot*.

Dr. Plot in his *Nat. Hist.* of *Oxford-shire* mentions divers *Subterraneous Oaks*, black as *Ebony*, quite through the whole substance of the *Timber*, caus'd (as he supposes, and learnedly evinces) by a *Vitriolic* humour of the *Earth*; of affinity to the nature of the *Ink-Galls*, which that kind of Tree produces: Of these he speaks of some found sunk under the ground, in an upright, and growing posture, to the perpendicular depth of sixty foot; of which one was three foot diameter, of an hardness emulating the politest *Ebony*: But these *Trees* had none of them their *Roots*, but were found plainly to have been cut off by the *kerf*: There were great store of *Hasel-Nuts*, whose shells were as found as ever, but no kernel within. It is there the learned *Author* gives you his conjecture, how these deep *Interrments* happen'd; namely by our *Ancesters* (many Ages since) clearing the Ground for *Tillage*, and when *Wood* was not worth converting to other uses, digging *Trenches* by the sides of many *Trees*, in which they buried some; and others they slung into *quagmires*, and *Lakes* to make room for more profitable *Agriculture*: But I refer you to the *Chapter*. In the mean time, concerning this *Mossie-Wood* (as they usually terme it, because, for the most part dug-up in *Mossie*, and *Moory-bogs* where they cut for *Turff*) it is highly probable (with the learned Mr. Ray) that these places were many ages since, part of *Firm-land* covered with *Wood*, afterwards undermined, and overwhelmed by the violence of the *Sea*, and so continuing submerg'd, till the *Rivers* brought down *Earth*, and *Mud* enough to cover the *Trees*, filling up the shallows, and restoring them to the *Terra-firma* again, which he illustrates from the like Accident upon the Coast of *Suffolk*, about *Dunwich*, where the *Sea* does at this day, and hath for many years past, much incroach'd upon the Land, undermining, and subverting by degrees, a great deal of high-ground; so as by ancient Writings it appears, a whole *Wood* of more than a Mile and half, at present is so far within the *Sea*: Now if in succeeding Ages (as probable it is enough) the *Sea* shall by degrees be fill'd up, either by its own working, or by *Earth* brought down by *Land-Floods*, still subsiding to the bottom, and surmounting the tops of these *Trees*, and so the space again added to the

the *Firm-land*; the *Men* that shall then live in those parts, will, it's likely, dig-up these *Trees*, and as much wonder how they came there, as we do at present those we have been speaking of: But we shall enquire farther concerning these *Subterranean* Productions anon, and whether the *Earth*, as well as the *Water*, have not the vertue of strange *Transmutations*: These *Trees* are found in *Moors*, by poking with *Staves* of three or four foot length, shod with *Iron*.

14. In *Scotland* (as we noted) there is a most beautiful sort of *Fir*, or rather *Pine* (some think it the *Spanish Pinafter*) growing upon the *Mountains*; of which, from the late *Marquess of Argyll*, I had sent me some seeds, which I have sown with tolerable success; and I prefer them before any other, because they grow both very erect, and fixing themselves stoutly, need little, or no support. And there near *Loughbrun*, 'twixt the *Lough*, and an *Hill*, they grow in such quantity; that from the spontaneous Fall, Ruine, and Decay of the *Trees* lying cross one another to a Man's height, partly cover'd with *Mosse*, and partly *Earth*, and *Grass* (which rots, fills up, and grows again) a considerable *Hill* has in process of time been raised to almost their very tops, which being an Accident of singular remark, I thought fit to mention.

15. For the many, and almost universal use of these *Trees*, both *Sea* and *Land* will plead,

The useful *Pine* for Ships

— dant utile Lignum  
— Navigis Pinos —

Georg. 2.

Hence *Papinius* 6. *Thebaïd.* calls it *audax abies*. They make our best *Mast*, *Sheathing*, *Scaffold-poles*, &c. heretofore the whole *Vessel*: It is pretty (saith *Pliny*) to consider, that those *Trees* which are so much sought after for Shipping, should most delight in the highest of *Mountains*, as if it fled from the *Sea* on purpose, and were afraid to descend into the *Waters*. With *Fir* we likewise make all intestine works, as *Wainscot*, *Floors*, *Pales*, *Balks*, *Laths*, *Boxes*, *Bellies* for all *Musical Instruments* in general, nay the *Ribs*, and *Sides* of that enormous *Stratagem*, the so famous *Trojan Horse*, may be thought to be built of this *Material*, and if the *Poet* mistake not,

— The *Ribs* with *Deal* they fit.

— Scilicet intexunt Abiete costas.

*Æn.* 2.

In *Holland* they receive their best *Masts* out of *Norway*, and even as far as *Moscovy*, which are best esteemed, (as consisting of long *fibers*, without *knots*) but *Deal-boards* from the *first*; and though *Fir* rots quickly in *Salt-Water*, it does not so soon perish in *fresh*; nor do they yet refuse it in *Merchant-Ships*, especially the upper-parts of them, because of its lightness: The true *Pine* was ever highly commended by the *Antients* for *Naval Architecture*, as not so easily decaying; and we read that *Trajan* caused *Vessels* to be built both of the true, and *spurious* kind well pitch'd, and over-laid with *lead*, which perhaps might hint our modern.



modern *Sheathing* with that *Metal* at present. *Fir* is exceeding smooth to *polish* on, and therefore does well under *Gilding* work, and takes *black* equal with the *Pear-tree*: Both *Fir*, and especially *Pine*, succeed well in *Carving*, as for *Capitels*, *Festoons*, nay *Statues*, especially being *Gilded*, because of the easiness of the *Grain*, to work, and take the *Tool* every way; and he that shall examine it nearly, will find that famous *Image* of the *B. Virgin* at *Loretto* (reported to be Carved by the hands of *S. Luke*) to be made of *Fir*, as the grain easily discovers it: The *Tortoise* (as *Vitruvius* terms it) and *beards* of Deal, kept dry, rejecting the *Whiteness* and white, is everlasting; nor does there any *Wood* so well agree with the *glew*, as it, or is so easie to be wrought: It is also excellent for *Beams*, and other *Timber-work* in *Houses*, being both light, and exceedingly strong, and therefore of every good use for *Bars*, and *bolts* of *Doors*, as well as for *Doors* themselves, and for the beams of *Coaches*, a board of an *Inch* and half thick, will carry the *body* of it with great ease, by reason of a natural *Spring* which it has, not easily violated: You shall find, that of old they made *Carts*, and *Coaches* of it: and for *Piles* to superstruct on in *boggy grounds*, most of *Venice*, and *Amsterdam* is built upon them, with so excessive charge, as some report, the *foundations* of their *houses* cost as much, as what is erected on them; there being driven-in no fewer than 13659 great *Masts* of this *Timber*, under the new *Stadt-house* of *Amsterdam*. For *Scaffolding* also there is none comparable to it; and I am sure we find it an extraordinary savor of *Oak*, where it may be had at reasonable price. I will not complain what an incredible mass of ready *Money*, is yearly exported into the *Northern Countries* for this sole Commodity, which might all be saved were we *industrious* at home, or could have them out of *Virginia*, there being no Country in the whole World stor'd with better; besides, another sort of *Wood* which they call *Cypress*, much exceeding either *Fir*, or *Pine* for this purpose; being as tough, and springy as *Tew*, and bending to admiration; it is also lighter than either, and everlasting in *wet*, or *dry*; so as I much wonder, that we enquire no more after it: In a word, not only here, and there an *house*, but whole *Towns*, and great *Cities* are, and have been built of *Fir* only; nor that alone in the *North*, as *Mosco*, &c. where the very Streets are *pav'd* with it, (the *bodies* of the Trees lying prostrate one by one in manner of a *Raft*) but the renowned *City* of *Constantinople*; and nearer home *Tbolose* in *France* was within little more than an hundred years, most of *Fir*, which is now wholly *Marble* and *Brick*, after 800 houses had been burnt, as it often chances at *Constantinople*, but where no accident even of this devouring nature, will at all move them to re-edifie with more lasting Materials: To conclude with the uses of *Fir*, we have most of our *Pot-Ashes* of this Wood, together with *Torch*, or *Funebral-Staves*; nay, and of old, *spears* of it, if we may credit *Virgil's Amazonian* Combate.

— She

—She prest  
A long Fir Spear through his expos'd Breast.

—Cujus apertum  
Adversus longâ tranſverberat abiete pectus.

ÆN. 11.

Lastly, the very *Chips*, or *Shavings* of *Deal-boards*, are of other use than to kindle *Fires* alone: *Thomas Bartholinus* in his *Medicina Danorum Dissert.* 7. &c. where he disclaims the use of *Hops* in *Beer*, (as pernicious and malignant, and from several instances how apt it is to produce and usher in *Infections*, nay, *Plagues*, &c.) would substitute in its place, the *Shavings* of *Deal-boards*, as he affirms, to give a grateful *odor* to the *Drink*; and how soverain those *resinous-woods*, the *Tops* of *Fir*, and *Pines* are against the *Scorbut*, *Gravel* in the *Kidneys* &c. we generally find: It is in the same *Chapter*, that he commends also *Wormwood*, *Marrubium*, *Chamelaugnum*, *Sage*, *Tamarisc*, and almost any thing, rather than *Hops*. The *bark* of the *Pine* heals *Ulcers*; and the inner *rind* cut small, contus'd, and boil'd in store of *water*, is an excellent remedy for burns and scalds, washing the *fore* with the *decoction*, and applying the softned *bark*: It is also soverain against *frozen* and benum'd *limbs*: The distill'd *water* of the green *Cones* takes away the *wrinkles* of the *face*, dipping cloaths therein, and laying them on it becomes a *Cosmetic* not to be despis'd. The *Pine*, or *Picea* buried in the *Earth* never decay: From the latter transudes a very bright, and pellucid *Gum*; hence we have likewise *Rosin*; also of the *Pine* are made *Boxes* and *Barrels* for *dry Goods*; yea, and it is cloven into *Shingles* for the covering of *Houſes* in some places; also *Hoops* for *Wine-Vessels*, especially of the easily flexible *Wild-pine*; not to forget the *Kernels* (this *Tree* being always furnish'd with *Cones*, some ripe, others green) of such admirable use in *Emulsions*; and for *Tooth-pickers*, even the very *leaves* are commended: In sum, they are *Plantations* which exceedingly improve the *Air*, by their *odoriferous*, and *balsamical* emissions, and for ornament, create a *perpetual Spring* where they are plentifully propagated. And if it could be proved that the *Almugim-trees*, Recorded 1 Reg. 10. 12. (whereof *Pillars* for that famous *Temple*, and the *Royal Palace*, *Harps*, and *Psalteries*, &c. were made) were of this sort of *Wood* (as some doubt not to assert) we should esteem it at another rate; yet we know *Josephus* affirms they were a kind of *Pine-tree*, though somewhat resembling the *Fig-tree* wood to appearance, as of a most lustrous *Candor*. In the 2 *Chrou.* 2. 8. there is mention of *Almug-trees* to grow in *Lebanon*; and if so, methinks it should rather be a kind of *Cedar*; (yet we find *Fir* also in the same period) for we have seen a *whiter* sort of it, even very *white* as well as *red*; though some affirm it to be but the *Sap* of it (so our *Cabinet-makers* call it) I say, there were both *Fir*, and *Pine-trees* also growing upon those *Mountains*, and the learned *Meibomius*, (in that curious *Treatise* of his *De Fabrica Trieremium*) shews, that there were such *Trees* brought out of *India*, or *Ophir*. In the mean time *Mr. Purchas* informs us, that *Dr. Dee* writ a laborious *Treatise* almost wholly of this *Subject* (but I could never have the good hap to

to see it) wherein, as *Commissioner for Solomon's Timber*, and like a Learned *Architect*, and *Planter*, he has summon'd a *Jury* of twelve sorts of *Trees*; namely, 1. the *Fir*, 2. *Box*, 3. *Cedar*, 4. *Cypress*, 5. *Ebony*, 6. *Ash*, 7. *Juniper*, 8. *Larch*, 9. *Olive*, 10. *Pine*, 11. *Oak*, and 12. *Sandal-trees*, to examine which of them were this *Almugim*, and at last seems to concur with *Josephus*, in favour of *Pine*, or *Fir*; who possibly, from some antient *Record*, or fragment of the *Wood* it self, might learn something of it; and 'tis believ'd, that it was some material both *odoriferous* to the *Scent*, and *beautiful* to the *Eye*, and of fittest temper to refract *Sounds*; besides its serviceableness for *Building*, all which Properties are in the best sort of *Pine* or *Thyina*, as *Pliny* calls it; or perhaps some other rare *Wood*, of which the *Eastern Indies* are doubtless the best provided; and yet I find, that these vast beams which sustain'd the Roof of *S. Peter's Church* at *Rome*, laid (as reported) by *Constantine the Great*, were made of the *Pitch-tree*, and have lasted from *Anno 336*. down to our days, above 1300. years.

16. But now whiles I am reciting the *Uses* of these beneficial *Trees*, *Mr. Winthorp* presents the *Royal Society* with the *Process* of making the *Tar*, and *Pitch* in *New-England*, which we thus abbreviate. *Tar* is made out of that sort of *Pine-tree*, from which naturally *Turpentine* exsilleth; and which at its first flowing out, is liquid and clear; but being hardned by the *Air*, either on the *Tree*, or where-ever it falls, is not much unlike the *Burgundy Pitch*; and we call them *Pitch-pines* out of which this gummy substance transudes: They grow upon the most barren plains, on *Rocks* also, and *Hills* rising amongst those *Plains*, where several are found blown down, that have lain so many *Ages*, as that the whole Bodies, Branches, and Roots of the *Trees* being perished, some certain knots only of the Boughs have been left remaining intire (these knots are that part where the bough is joyn'd to the body of the Tree) lying at the same distance and posture, as they grew upon the Tree for its whole length. The Bodies of some of these *Trees* are not corrupted through age, but quite consum'd, and reduc'd to ashes, by the annual burnings of the *Indians*, when they set their grounds on fire; which yet has, it seems, no power over these hard knots, beyond a black scorching; although being laid on heaps, they are apt enough to burn. It is of these knots they make their *Tar* in *New-England*, and the *Country* adjacent, whiles they are well impregnated with that *Terebinthine*, and *Resinous* matter, which like a *Balsom*, preserves them so long from putrefaction. The rest of the Tree does indeed contain the like *Terebinthine Sap*, as appears (upon any slight incision of bark on the stem, or boughs) by a small crystalline pearl which will sweat out; but this, for being more watery, and undigested by reason of the porosity of the Wood, which exposes it to the immissions of the *Air* and *Wet*, renders the Tree more obnoxious; especially, if it lie prostrate with the bark on, which is a receptacle for a certain *Intercontaneous Worm*, that accelerates its decay. They



are the *knots*; then alone, which the *Tar-makers* amass in *heaps*, carrying them in *Carts* to some convenient place not far off, where finding *Clay*, or *Loam* fit for their turn, they lay an *Hearth* of such ordinary stone as they have at hand: This, they build to such an height from the level of the ground, that a *Vessel* may stand a little lower than the *Hearth*, to receive the *Tar* as it runs out: But first, the *Hearth* is made wide, according to the quantity of *knots* to be set at once, and that with a very smooth *floor* of *Clay*, yet somewhat descending, or dripping from the extreame parts to the *middle*, and thence towards one of the *sides*, where a *gullet* is left for the *Tar* to run out at. The *Hearth* thus finish'd, they pile the *knots* one upon another, after the very same manner as our *Colliers* do their wood for *Char-coal*; and of a height proportionable to the breadth of the *Hearth*; and then cover them over with a coat of *loam*, or *clay* (which is best) or in defect of those, with the best, and most tenacious *Earth* the place will afford; leaving only a small *spinnacle* at the top, whereat to put the *fire* in; and making some little *holes* round about at several heights, for the admission of so much *air*, as is requisite to keep it burning, and to regulate the *fire*, by opening, and stopping them at pleasure. The process is almost the same with that of making *Char-coal*, as will appear in due place; for, when it is well on *fire*, that middle *hole* is also stopp'd, and the rest of the *Registers* so govern'd, as the *knots* may keep burning, and not be suffocated with too much *smoak*; while all being now through-heated, the *Tar* runs down to the *Hearth*, together with some of the more watry *Sap*, which hasting from all parts towards the *middle*, is convey'd by the fore-mention'd *gutter*, into the *Barrel*, or *Vessel* placed to receive it: Thus, the whole *Art* of *Tar-making* is no other, than a kind of rude distillation *per defensionem*, and might therefore be as well done in *Furnaces* of large capacity, were it worth the expence. When the *Tar* is now all melted out, and run, they stop up all the *vents* very close; and afterwards find the *knots* made into excellent *Char-coal*, prefer'd by the *Smiths* before any other whatsoever, which is made of wood; and nothing so apt to burn out when their *blast* ceaseth; neither do they sparkle in the *fire*, as many other sorts of *Coal* do; so as, in defect of *Sea-coal*, they make choice of this, as best for their use, and give greater prices for it. Of these *knots* likewise do the *Blunters* split out small *slivers*, about the thickness of one's *finger*, or somewhat thinner, which serve them to burn in stead of *Candles*; giving a very good light. This they call *Candle-wood*, and it is in much use both in *New-England*, *Virginia*, and amongst the *Dutch planters* in their *Villages*; but for that it is something offensive, by reason of the much fuliginous *smoak* which comes from it, they commonly burn it in the *chimney-corner*, upon a flat *stone* or *iron*; except, occasionally, they carry a single *stick* in their hand, as there is need of light to go about the house. It must not be conceiv'd, by what we have mention'd in the former description of the *knots*, that they are only to be separated from the *bodies* of the trees by devouring *time*, or that they are the only materials, out of which

Tar

Tar can be extracted: For there are in these *Tracts*, millions of *Trees* which abound with the same sort of *knots*; and full of *Turpentine* fit to make *Tar*: But the labour of *felling* these *Trees*, and of *cutting* out their *knots*, would far exceed the value of the *Tar*; especially, in *Countries* where *Workmen* are so very dear: But those *knots* above mention'd, are provided to hand, without any other labour, than the gathering only. There are sometimes found of those sort of *Pine-trees*, the lowest part of whose stems towards the root is as full of *Turpentine*, as the *knots*; and of these also may *Tar* be made: but such *Trees* being rarely found, are commonly preserved to split into *Candle-wood*; because they will be easily *riven* out into any lengths, and scantlings desir'd, much better than the *knots*. There be, who pretend an art of as fully *impregnating* the body of any living *Pine-tree*, for six, or eight foot high; and some have reported that such an art is practis'd in *Norway*: But upon several *experiments*, by *girdling* the *Tree* (as they call it) and cutting some of the *bark* round, and a little into the wood of the *Tree* six, or eight foot distant from the ground, it has yet never succeeded; whether the just *season* of the year were not observ'd, or what else omitted, were worth the *disquisition*; if at least there be any such *secret* amongst the *Norwegians*, *Swedes*, or any other *Nation*. Of *Tar*, by boiling it to a sufficient height, is *Pitch* made: and in some places where *Rosin* is plentiful, a fit proportion of *that*, may be dissolved in the *Tar* whiles it is boiling, and this *mixture* is soonest converted to *Pitch*; but it is of somewhat a differing kind from that which is made of *Tar* only, without other composition. There is a way which some *Ship-Carpenters* in those *Countries* have us'd, to bring their *Tar* into *Pitch* for any sudden use; by making the *Tar* so very hot in an *Iron Kettle*, that it will easily take *fire*, which when *blazing*, and set in an *airy* place, they let burn so long, till, by taking out some small quantity for trial, being *cold*, it appears of a sufficient *consistence*. Then by covering the *Kettle* close, the *fire* is extinguish'd, and the *Pitch* is made without more ceremony. There is a process of making *Rosin* also, out of the same *knots*, by splitting them out into thin pieces, and then boiling them in *water*, which will educe all the *Resinous* matter, and gather it into a *body*, which (when cold) will harden into pure *Rosin*. It is moreover to be understood, that the *Fir*, and most *Coniferous* *Trees*, yield the same *Concretes*, *Lachryma*, *Turpentine*s, *Rosins*, *Hard*, *Naval* or *stone*, and *liquid Pitch*, and *Tar* for remedies against the *Cough*, *Arthritic* and *Pulmonic* affections; The *Chirurgion* uses it in *Plasters* also; and in a word, for *Mechanic* and other innumerable *uses*; and from the burning, and fuliginous vapour of these, especially the *Rosin*, we have our *Lamp*, and *Printers* black, &c. I am perswaded the *Pine*, and *Fir* trees in *Scotland*, might yield his *Majesty* plenty of excellent *Tar*, were some industrious Person employ'd about the work. But there is another process not much unlike the former, which is given us by the present *Archbishop* of *Samor*, *Joseph Georgirenes*, in his description of *that*, and other *Islands* of the *Ægean*.

Their way of making *Pitch* (says he) is thus: They take *Sapines*, that is, that part of the *Fir*, so far as it hath no *knots*; and shaving away the extreame parts, leave only that which is nearest to the middle, and the *Pith*: That which remains, they call *Dadi* (from the old Greek word *Δάδες*, whence the Latine *Teda*) These they split into small pieces, and laying them on a *Furnace*, put fire to the upper part, till they are all burnt, the liquor in the mean time running from the wood, and let out from the bottom of the *Furnace*, into a hole made in the ground, where it continues like *Oyl*: Then they put *Fire* to't, and stir it about till it thicken, and has a consistence: After this, putting out the *Fire*, they cast *Chalk* upon it, and draw it out with a vessel, and lay it in little places cut out of the ground, where it receives both its form, and a firmer body for easie transportation: Thus far the *Archbishop*; but it is not so instructive, and methodical as what we have describ'd above.

## C H A P. XXIII.

### Of the Larch, Platanus, Lotus, Cornus, &c.

*Larch.*

**I.** *Larix*, though of the *Coniferous* family, loses its leaf, (thrust off when the new comes) and therefore we separate him from the *Firs*, and *Pines*; I have rais'd it my self of seed, and why we might not hope as well of the *Larch*, as from any of them, I know not: I read of *Beams* of no less than 120. foot in length, made out of this goodly Tree, which is of so strange a composition, that 'twill hardly burn; whence *Mantuan*, *Et robusta Larix igni impetrabile lignum*: for so *Cesar* found it in a *Castle* he besieg'd, built of it; (the story is recited at large by *Vitruvius* l. 2. c. 9.) but see what *Philander* says upon the place, on his own experience; yet the *Coals* thereof were held far better than any other, for the melting of *Iron*: and to say the truth, we find they burn it frequently as common fuel in the *Valloline*, if at least it be the true *Larix*, which they now call *Melere*. There is abundance of this *Larch* timber in the *Buildings* at *Venice*, especially about the *Palaces* in *Piazza San Marco*, where I remember *Scmozzi* says he himself us'd much of it, and infinitely commends it. Nor did they only use it in *Houses*, but in *Naval Architecture* also: the *Ship* mention'd by *Witsen* (a late *Dutch* Writer of that useful *Art*) to have been found not long since in the *Numidian* Sea, twelve fathoms under water, being chiefly built of this *Timber*, and *Cypress*, both reduc'd to that induration and hardness, as greatly to resist the fire, and the sharpest tool; nor was any thing perished of it, though it had lain above a thousand, and four hundred years submerged: The *Decks* were cover'd with linnen, and plates of lead, fixed



fixed with nails gilt, and the intire *Ship* (which contain'd thirty foot in length) so stanch, as not one drop of water had soaked into any room. *Tiberius* we find built that famous *Bridge* to his *Nau-machia* with this wood, and it seems to excel for *Beams, Doors, Windows,* and *Masts of Ships*, resists the *worm*; being driven into the ground, it is almost petrified, and will support an incredible Weight; which (and for its property of long resisting fire) makes *Vitruvius* wish, they had greater plenty of it at *Rome* to make *Goists* of, where the *Forum* of *Augustus* was (it seems) built of it, and divers *Bridges* by *Tiberius*; for that being attempted with *Fire*, it is long in taking hold, growing only black without. From this *Tree* it is, that useful Drug *Agaric* is gathered; and the timber of it is so exceedingly transparant, that *Cabanes* made of the thin boards, when in the dark night, they have lighted candles, people, who are at a distance without doors, would imagine the whole room to be on fire, which is pretty odd, considering there is no material so unapt to kindle. The *Larix* bears polishing excellently well, and the *Turners* abroad much desire it: *Vitruvius* says 'tis so ponderous, that it will sink in the water. That which now grows some where about *Chelmsford* in *Essex*, arriv'd to a flourishing, and ample *Tree*, does sufficiently reproach our negligence, and want of industry, as well as the incomparable, and shady.

2. *Platanus*, that so beautiful, and precious *Tree*, so doated on *Platanus*, by *Xerxes*, that *Ælian* and other *Authors* tell us he made halt, and stop'd his prodigious *Army* of seventeen hundred thousand *Souldiers*, which even cover'd the *Sea*, exhausted *Rivers*, and thrust *Mount Athos* from the *Continent*, to admire the pulchritude, and procrity of one of these goodly *Trees*, and became so fond of it, that spoiling both himself, his *Concubines*, and great *Persons* of all their jewels, he cover'd it with *Gold, Gems, Neck-laces, Scarfs* and *Bracelets*, and infinite riches; In sum, was so enamor'd of it, that for some days, neither the concernment of his grand *Expedition*, nor interest of honour, nor the necessary motion of his portentous *Army*, could perswade him from it: He styl'd it his *Missis*, his *Minion*, his *Goddes*; and when he was forc'd to part from it, he caus'd the figure of it to be stamp'd in a *Medail* of *Gold*, which he continually wore about him. Wherever they built their sumptuous, and magnificent *Colleges* for the exercise of *Youth* in *Gymnastics*, as *Riding, Shooting, Wrestling, Running, &c* (like to our *French Academies*) and where the graver *Philosophers* also met to converse together, and improve their *Studies*, betwixt the *Kista*, and *Subdiales ambulationes* (which were *Porticos* open to the air) they plant'd *Graves*, and *Walks*, of *Platanus*, to refresh, and shade the *Palestrite*; as you have them describ'd by *Vitruvius*, lib. 5. cap. 11. and as *Claudian Perrault* has assisted the *Text*, with a *Figure*, or *Ichnographical plot*. These *Trees* the *Romans* first brought out of the *Levant*, and cultivated with so much industry and cost, for its stately and proud head only; that great *Orators*, and *States-men*, *Cicero*, and *Hortensius* would exchange

Macrobo. Sa-  
turnal. 3.

now

now and then a *turn* at the *Bar*, that they might have the pleasure to step to their *Villas*, and refresh their *Platans*, which they would often irrigate with *Wine* instead of *Water*; and so priz'd the very shadow of it, that when afterwards they transplanted them into *France*, they exacted a *Tribute* of any of the *Natives*, who should presume but to put his *head* under it. *Pliny* tells us there is no *Tree* whatsoever which so well defends us from the heat of the *Sun* in *Summer*; nor that admits it more kindly in *Winter*. And for our encouragement, I do upon experience assure you, that they will flourish, and abide with us, without any more trouble than frequent, and plentiful *Watering*, which from their youth, they excessively delight in, and gratefully acknowledge by their growth accordingly; so as I am perswaded, that with very ordinary Industry, they might be propagated to the incredible Ornament of the *Walks*, and *Avenues* to Great-mens houses. The Introduction of this true *Plane* amongst us, is due to that honourable Gentleman, *Sir Geo. Crook* of *Oxfordshire*, from whose bounty I received an hopeful plant now growing in my *Villa*.

3. There was lately at *Basil* in *Switzerland*, an ancient goodly *Platanetum*, and now in *France* they are come again in vogue: I know it was antiently accounted *exopto*; but they may with us be rais'd of their seeds with care, in a moist soil, as here I have known them: But the reason of our little success, is, that we very rarely have them sent us ripe; which should be gather'd late in *Autumn*, and brought us from some more *Levantine* parts than *Italy*. They come also of *Layers* abundantly; affecting a fresh, and feeding ground; for so they plant them about their *Rivulets*, and *Fountains*. The *West-Indian Plane* is not altogether so rare, but it rises to a goodly *Tree*, and bears a very ample, and less jagged leaf; That the *Turks* use their *Platanus* for the building of *Ships*, I learn out of *Ricciolus Hydrog.* l. 10. c. 37.

*Lotus.*

4. The same opinion have I of the noble *Lotus Arbor*, (another lover of the *Water*) which in *Italy* yields both an admirable shade, and *Timber* immortal. Of this *Wood* are made *Pipes*, and *Wind-Instruments*, and of its *Root*, *Hasts* for *knives* and other *Tools*, &c. The offer of *Cassius* to *Domitius* for half a dozen of these *Trees*, growing about an house of his in *Rome*, testifies in what esteem they were had for their incomparable beauty and use. The *Cornel-tree*, though not mention'd by *Pliny* for its *Timber*, is exceedingly commended for its durableness, and use in *Wheel-work*, *Pinnas*, and *Wedges*, in which it lasts like the hardest *Iron*; and it will grow with us to good bulk and stature; and the preserv'd, and pickl'd berries, are most refreshing, and an excellent condiment; But that is very odd, which *Matthiols* affirms upon his own experience, that one who has been bitten of a *Mad-dog*, if in a year after he handle the *Wood* of this *Tree* till it grow warm, relapses again into his distemper.

*Cornus.*

## C H A P. XXIV.

*Of the Cypress-tree, and Cedar.*

**C***ypressus*, the *Cypress-Tree*, is either the *Sative*, or *Garden tree*, *Cypress*. the most *pyramidal* and beautiful; or that which is call'd the *Male*, (though somewhat preposterously) which bears the *Cones*, but is of a more extravagant shape: should we reason only from our common *experience*, even the *Cypress-tree* was, but within a few years past, reputed so tender, and nice a *Plant*, that it was cultivated with the greatest care, and to be found only amongst the *Carrions*; whereas we see it now, in every *Garden*, rising to as goodly a bulk and stature, as most which you shall find even in *Italy* it self; for such I remember to have once seen in his late *Majesties Gardens* at *Theobalds*, before that *Princely seat* was demolish'd. I say, if we did argue from this *Topic*, methinks it should rather encourage our *Country-men* to add yet to their *Plantations* other *Foreign*, and *useful Trees*, and not in the least deter them, because many of them are not as yet become *endeniz*on'd amongst us.

2. We may read that the *Peach* was at first accounted so tender, and delicate a *Tree*, as that it was believ'd to thrive only in *Persia*; and even in the days of *Galen*, it grew no nearer then *Egypt*, of all the *Roman Provinces*, but was not seen in the *City*, till about thirty years before *Pliny's* time; whereas, there is now hardly a more common, and universal in *Europe*: Thus likewise, the *Avellana* from *Pontus* in *Asia*; Thence into *Greece*, and so *Italy*, to the *City of Abellino* in *Campania*.

*Una tantum litera immutata, Avellina dicti, que prius Abellina.*

I might affirm the same of our *Damasco Plum*, *Quince*, *Medlar*, *Figue*, and most ordinary *Pears*, as well as of several other *Peregrine Trees*, *Fruit-bearers*, and others; For even the very *Damask-rose* it self, (as my Lord *Bacon* tells us *Cent. 2. Exp. 659.*) is little more than an *hundred-years old* in *England*: Methinks this should be of wonderful incitement. It was 680 years after the foundation of *Rome*, ere *Italy* had tasted a *Cherry* of their own, which being then brought thither out of *Pontus* (as the above-mention'd *Filberts* were) did after 120 years, travel *ad ultimos Britannos*.

3. *Josephus* tells us, That the *Cedar* in *Judea* was first planted there by *Solomon*, who doubtless try'd many rare *Experiments* of this nature; and none more Kingly than that of *Planting to Posterity*. I do not speak of those which grow on the *Mountains of Libanus*, in the colder, and Northern tracts of *Syria*: But as I am inform'd by that curious Traveller, *Kanwolffus*, (since also confirm'd by that *Virtuosa Monsieur Monconys*) there remaining now not above twenty four of those stately *Trees*, in all those goodly *Forests*, where that mighty *Prince* set four score thousand *Hewers*



at work for the *Materials* of one only *Temple* and a *Palace*, 'tis a pregnant *Example* what *Time*, and *Neglect* will bring to *ruine*, if due, and continual care be not taken to propagate *Timber*. We see almost the whole tract of *Apennines*, strip'd of the *Pines* and *Firs* (which formerly as *Vitruvius* testifies *L. 2. C. 10.* covered those *Mountains*) to that degree, as to render not only the *City* of *Florence*, but *Rome* herself so expos'd to the nipping *tramon-tane Winds* (as they call the *North*) that almost nothing, which is rare, and curious, will grow without art and *hyemation*; so as even in most of those parts of *Italy* flanker'd by those *hills*, (and cover'd as now they perpetually are with *snow*) they are fain to *house* their *Orange*, and other tender *Trees* as we do here in *England*.

4. Nor is it any wonder if we find the whole *Species* of some *Trees* so totally lost in a *Countrey*, as if there had never been any such planted in it; Be this therefore applied to *Fir*, *Pine*, and many others with us; since it was so long ere *Rome* was acquainted with them, or indeed with any of the *Pitch*-bearers we have mention'd.

5. We had out first *Myrtils* out of *Greece*, and *Cypresses* from *Crete*, which was yet a meer stranger in *Italy*, as *Pliny* reports, and most difficult to be rais'd; which made *Cato* to write more concerning the *culture* of it, than of any other *Tree*: Notwithstanding we have in this *Country* of ours, no less than *three* sorts, which are all of them easily propagated, and prosper very well, if they are rightly ordered; and therefore I shall not omit to disclose one *secret*, as well to confute a popular *Errour*, as for the *Instruction* of our *Gard'ners*.

6. The *Tradition* is, That the *Cypress* (being a *Symbol* of *Mortality*, they should say of the contrary) is never to be cut, for fear of *kill*ing it. This makes them to *impale*, and *wind* them about, like so many *Egyptian Mummies*; by which means, the inward parts of the *Tree* being heated, for want of *Air* and *Refreshment*, it never arrives to any perfection, but is exceedingly troublesome, and chargeable to maintain; whereas indeed, there is not a more *tan-sile*, and governable *Plant* in nature; For the *Cypress* may be cut to the very *Roots*, and yet spring afresh: And this we find was the *hus-bandry* in the *Isle* of *Ænaria*, where they us'd to fell it for *Copp'ce*: For the *Cypress* being rais'd from the *Nursery* of *Seeds* sown in *September* (or rather *March*), and within two years after *transplant*-ed, should at two years standing more, have the *master-stem* of the *middle* shaft cut off some hand-breadth below the *summit*, the *sides*, and smaller sprigs shorn into a *conique*, or *pyramidal* form, and so kept *clipp'd* from *April* to *September*, as oft as there is occasion; and by this *Regiment*, they will grow *furnish'd* to the *foot*, and become the most *beautiful* *Trees* in the world, without *binding* or *stake*; still remembring to *abate* the *middle* stem, and to bring up the *col-lateral* branches in its stead to what altitude you please; but when I speak of *shortning* the *middle* shoot, I do not intend the *dwarfing* of it, and therefore it must be done discreetly, so as it may not over-hastily advance, till the *foot* thereof be perfectly furnished: But there is likewise another, no less commendable expedient, to  
dress

dress this *Tree* with all the former advantages; if sparing the shaft altogether, you diligently cut away all the *forked branches*, reserving only such as radiate directly from the *body*, which being shorn, and clipt in due season, will render the *Tree* very beautiful; and though more subject to obey the shaking *winds*, yet the natural *spring* of it, does immediately redress it, without the least discomposure; and this is a *secret* worth the learning of *Gard'ners*, who subject themselves to the trouble of *stakes*, and *binding*, which is very inconvenient. Thus likewise may you form them into *Hedges*, and *Topiary* works, or by sowing the *Seeds* in a shallow *furrow*, and plucking up the *Supernumeraries* where they come too close and thick: For in this *work*, it will suffice to leave them within a foot of each other; and when they are risen about a yard in height (which may be to the half of your *Palisado*) cut off their *tops*, as you are taught, and keep the sides *clipp'd*; that they ascend but by degrees, and thicken at the bottom as they climb. Thus, they will present you (in half a dozen or eight years) with incomparable *Hedges*, preferable to all others whatsoever, because they are perpetually green, and able to resist the *Winds* better than any which I know, the *Holly* only excepted, which indeed has no peer.

7. When I say *Winds*, I mean their fiercest *gusts*, not their *cold*: For though it be said, *Brumâque illæsa Cupressus*, and that indeed no *frost* impeaches them (for they grow even on the *snowy tops* of *Ida*,) yet our cruel *Eastern* winds do sometimes mortally invade them which have been late *clipp'd*, seldom the untouch'd, or that were *dressed* in the *Spring* only: The effects of the late *March*, and *April* Winds (in the years 1663. and 1665.) accompanied with cruel *Frosts*, and cold *blasts*, for the space of more than two months night and day, did not amongst near a thousand *Cypresses* (growing in my *Garden*) kill above three or four, which for being very late cut to the *quick* (that is, the latter end of *October*) were raw of their *wounds*, took cold, and *gangreen'd*; some few others which were a little smitten towards the *tops*, might have escaped all their blemishes, had my *Gard'ner* capp'd them but with a *stiff* of *hay* or *straw*, as in my absence, I commanded. As for the *frost* of those *Winters* (than which I believe there was never known a more cruel and deadly piercing since *England* had a name) it did not touch a *Cypress* of mine, till it join'd forces with that destructive *Wind*: Therefore for *caution*, clip not your *Cypresses* late in *Autumn*, and cloath them (if young) against these *winds*; for the *frosts* they only *discolour* them, but seldom, or never hurt them, as by long *experience* I have found.

8. If you affect to see your *Cypress* in *Standard*, and grow wild (which may in time come to be of a large substance, fit for the most immortal of *Timber*, and indeed are the least obnoxious to the rigours of our *Winters*, provided you never *clip*, or *disbranch* them) plant of the reputed *Male* sort; it is a *Tree* which will prosper wonderfully; and where the ground is *bar*, and *gravelly*, though (as we said) he be nothing so beautiful;

and it is of *this*, that the *Venetians* make their greatest profit.

9. There is likewise the *Tarentine Cypress*, so much celebrated by *Cato*; I do not mean our *Savine*, (which some erroneously take for it, though there be a *Berry-bearing Savine*, much resembling the *Cypress*, which comes to prove a gallant, upright *Tree*, fit for the *Standard*.) Both *that*, and the *Milesian*, are worthy our culture.

10. I have already shew'd how this *Tree* is to be rais'd from the seed; but there was another *Method* amongst the *Antients*, who (as I told you) were wont to make great *Plantations* of them for their *Timber*: I have practis'd it my self, and therefore describe it.

11. If you receive your seed in the *Nuts*, which uses to be gather'd *abrice* (a year, (but seldom ripening with us) expose them to the *Sun* till they gape, or near a gentle fire, or put them in warm water, by which means the seeds will be easily shaken out; for if you have them open before, they do not yield you half their crop. About the beginning of *April* (or before, if the weather be showery) prepare an even *Bed*, which being made of fine earth, clap down with your *Spade*, as *Gard'ners* do for *Purslain-seed* (of old they roll'd it with some *Stone*, or *Cylinder*) Upon this strew your seeds pretty thick; then sift over them some more mould, somewhat better than half an *inch* in height: keep them duly watered after *Rising*, unless the season do it for you; and after one years growth (for they will be an *inch* high in little more than a *Month*) you may transplant them where you please. In watering them, I give you this *Caution* (which may also serve you for most tender, and delicate seeds) that you dew them rather with a broom, or *Spergitor*, than hazard the beating them out with the common watering-pot; and when they are well come up, be but sparing of water: Be sure likewise that you cleanse them when the weeds are very young and tender, lest in stead of purging, you quite eradicate your *Cypresses*. We have spoken of *Watering*, and indeed whilst young, as well follow'd, they will make a prodigious advance: when that long, and incomparable walk of *Cypress* at *Frascati* near *Rome*, was first planted, they drew a small stream (and indeed *Irrigatio* is properly thus, *aquam inducere riguis* (i. e.) in small gutters and *nills*) by the foot of it, (as the *Water* there is in abundance tractable) and made it (as I was credibly inform'd) arrive to seven, or eight foot height in one year; but with us, we may not be too prodigal; since, being once well taken, they thrive best in our sandy, light, and warmest grounds, whence *Cardan* says, *juxta aquas crescit*, meaning in low, and moorish places, stiff, and cold earth, &c. where they never thrive.

12. What the Uses of this *Timber* are, for *Chests*, and other *Utensils*, *Harps*, and divers other *Musical Instruments* (it being a very sonorous wood, and therefore employ'd for *Organ-pipes*, as heretofore for supporters of *Vines*, *Poles*, *Rails*, and *Planks*, (resisting the *Worm*, *Moth*, and all putrefaction to eternity) the *Venetians* sufficiently understand; who did every *twenty* year, and oftener



ner (the Romans every thirteen) make a considerable Revenue of it out of *Candy*: And certainly, a very gainful commodity it was, when the *Fell* of a *Cupressetum*, was heretofore reputed a good *Daughters Portion*, and the *Plantation* it self call'd *Dotem filia*. But there was in *Candy* a vast *Wood* of these *Trees*, belonging to the *Republique*, by malice, or accident (or perhaps by solar heat, as were many woods 74 years after, even here in *England*) set on *Fire*, which *Anno* 1400. burning for seven years continually, before it could be quite extinguish'd, fed so long a space by the un-*Exons* nature of the *Timber*, of which there were to be seen at *Venice* planks of above four foot in breadth; and formerly the *Valves* of *St. Peters Church* at *Rome*, were framed of this Material, which lasted from the great *Constantine*, to *Pope Eugenius* the *Fourth* time, almost six hundred years; and then were found as fresh, and intire as if they had been new: But this *Pope* would needs change them for *Gates of Brass*, which were cast by the famous *Antonio Philarete*; not in my opinion so venerable, as those of *Cypress*. It was in *Coffins* of this material, that *Thucydides* tells us, the *Athenians* us'd to bury their *Heroes*, and the *Mummy-Chests* brought with those *Condited bodies* out of *Egypt*, are many of them of this material, which 'tis probable may have lain in those dry, and sandy *Crypta*, many thousand years.

13. The *Timber* of this wood was of infinite esteem with the *Antients*: That lasting *Bridge* built over the *Euphrates* by *Semiramis*, was made of this wood; and it is reported, *Plato* chose it to Write his *Laws* in, before *Brass* it self, for the *diurnity* of the matter: It is certain, that it never rifts or cleaves, but with great violence; and the bitterness of its juice, preserves it from all *Worms*, and putrifaction. To this day those of *Crete*, and *Malta* make use of it for their *Buildings*; because they have it in plenty, and there is nothing out-lasts it, or can be more beautiful, especially, than the *Root* of the wilder sort, incomparable for its *crisped undulations*. Divers *Learned Persons* have conceiv'd the *Gopher* mention'd in holy *Writ*, *Gen. 6. 14.* and of which the *Ark* was built, to have been no other than this *Κυπρίσιος*, *Cupar*, or *Cuper*, by the easie mutation of *Letters*; *Aben Ezra* names it a light wood apt to swim; so does *David Kimchi*; which rather seems to agree with *Fir* or *Pine*, and such as the *Greeks* call *ξύλα τετραγώνια* *quadrangular Trees*, about which *Critics* have made a deal of stir: But *Isa. Vossius* (on the *LXX. c. 11.*) has sufficiently made it out, that the *Timber* of that denomination was of those sort of *Trees* whose *Branches* breaking out just opposite to one another at right *Angles*, make it appear to have been *Fir*, or some sort of wood whose *Arms* grew in an uniform manner; but surely this is not to be universally taken; since we find *Tew*, and divers other trees, brittle, heavy, and unapt for *Shipping* do often put forth in that order: The same learned *Author* will have *Gopher* to signify only *Pitch*, or *Bitumen*, as much as if the *Text* had said, Make an *Ark* of resinous *Timber*. The *Chalde paraphrase* translates it *Cedar*, or as *Junius* and *Tremellius*, *Cedrelaten*, a species between *Fir* and

*Cedar*: *Munster* contends for the *Pine*, and divers able *Divines* endeavour to prove it *Cypress*; and beside, 'tis known, that in *Crete* they employ'd it for the same use in the largest *contignations*, and did formerly build *Ships* of it: And *Epiphanius* *Heres.* l. 1. tells us, some *Reliques* of that *Ark* (*circa Campos Sennaar*) lasted even to his days, and was judg'd to have been of *Cypress*. Some indeed suppose that *Gopher* was the Name of a place à *Cupressis*, as *Elon* à *Quercubus*; and might possibly be that which *Strabo* calls *Cupressetum*, near *Adiabene* in *Assyria*: But for the reason of its long lasting, *Coffins* (as noted) for the dead were made of it, and thence it first became to be *Diti Sacra*; and the *Valves*, or *Doors* of the *Ephesine* Temple were likewise of it, as we observ'd but now were those of *St. Peters* at *Rome*: Works of *Cypress-wood*, *permanent ad diuturnitatem*, says *Vitruvius* l. 2. and the Poet

——perpetuà nunquam moritura Cupresso.

Mart. E. 6. 6.

But to resume the disquisition, whether it be truly so proper for *Shipping*, is controverted, though we also find in *Cassiodorus* *Var.* l. 5. Ep. 16. *Theodoric* (writing to the *Prætorio-præfectus*) caused store of it to be provided for that purpose; and *Plato* (who we told you made *Laws*, and *Titles* to be *Engraven* in it) nominates it *inter Arborès* *ναυπηγίς* *utilis*, l. 4. leg. and so does *Diodorus* l. 19. And as *Travellers* observe, there is no other sort of *Timber* more fit for *Shipping*, though others think it too heavy: *Aristobolus* affirms, that the *Assyrians* made all their *Vessels* of it; and indeed the *Romans* prais'd it, pitch'd with *Arabian* Pitch: and so frequent was this *Tree* about those parts of *Assyria* (where the *Ark* is conjectur'd to have been built) that those vast *Armadas*, which *Alexander* the Great caus'd to be Equipp'd and set out from *Babylon*, consisted only of *Cypress*, as we learn out of *Arrian* in *Alex.* l. 7. and *Strabo* l. 16. *Plutar.* *Sympos.* l. 1. Prob. 2. *Vegetius* l. 4. c. 34. &c. *Paulus Colamennus* (in his *κρημνία literaria* cap. 24.) perstringes the most Learned *J. Vossius*, that in his *Vindicia pro LXX. Interp.* he affirms *Cypress* not fit for *Ships* as being none of the *πλεονεχέας*: But besides what we have produc'd, *Fuller*, *Bochartus*, &c. *Lilius Geraldus* (*lib. de Navig.* c. 4.) and divers others, sufficiently evince it, and that the *Vessel* built by *Trajan* was of that material, lasting uncorrupt near 1400 years, when it was afterwards found in a certain *Lake*; if it were not rather (as I suspect) that which *Aeneas Silvius* reports to have been discovered in his time, lying under *Water* in the *Numician Lake*, crusted over with a certain ferruginous mixture of *Earth* and *Scales*, as if it had been of *Iron*; but (as we have elsewhere noted) it was pronounc'd to be *Larix*, and not *Cypress*, employ'd by *Tiberius*: Finally (not to forget even the very *chips* of this precious wood, which give that flavour to *Muscadines*, and other rich *Wines*) I commend it for the improvement of the *Air*, and a specific for the *Lungs*, as sending forth most sweet, and *aromatick* emissions, when ever it is either

clipp'd,

Hadrian. Ju-  
vius Animadn.  
l. 1. c. 20.

clipp'd, or handled, and the chips, or cones being burnt, extinguishtes Moths, and expells the Gnats and Flies, &c. not omitting the Gum which it yields, not much inferiour to the Terbinthine, or Lentisc. But,

*Quid tibi odorato referam sudantia ligno,*  
if I forget

14. The Cedar? which grows in all *extreams*: In the moist *Barbados*, the hot *Bermudas*, the cold *New-England*; even where the *snow* lyes (as I am assur'd) almost half the year; (for so it does on *Mount Libanus*, from whence I have receiv'd seed of those few remaining Trees) Why then it should not thrive in *Old England*, I conceive is from our want of *Industry*: It grows in the *Bogs* of *America*, and in the *Mountains* of *Asia*; it seems there is no place affrights it; I have frequently rais'd it of the *Seeds*, which I set like the *Bay-berries*; and we might have of the very best kind in the *World*, from the *Summer Islands*, though now almost utterly exhausted there also, and so the most incomparable of that *sacred wood*, like to be quite destroy'd by our *negligence*, which is by nature almost *eternal*: But that which we have from *Barbados* and *Jamaica*, is a spurious sort, and of so porous a nature, as that *Wine* will seak through it; yet that which they so call in *New-England*, is a lofty grower, which being saw'd into *Planks* makes excellent *flooring*, and *everlasting*: They *shingle* their houses with it, and use it in all their edifices: why have we not more of these *species* brought over amongst us both to plant, and work out? In the meantime, 'tis the *Oxycedrus* of *Lycia*, which the *Architect Vitruvius* describes to have its leaves resembling *Cypress*; the right *Phenician Cedar* has them liker the *Juniper*, and it bears a *Cone* not so pointed, and distinct in *scales*, as I have seen them from *Mount Libanus* it self.

15. Thus I read that, in the *Temple* of *Apollo* at *Usica*, there was found *Timber* of near *two thousand* years old; and in *Saguntj* of *Spain*, a *Beam* in a certain *Oratory* consecrated to *Diana*, which had been brought from *Zant* two hundred years before the *Destruction* of *Troy*: The *Statue* of that *Goddess* in the famous *Ephesine Temple*, was of this material also, as was most of the *Timber-work* in all their sacred *Edifices*.

16. And here I cannot omit my *Wishes*, that since this precious material may be had at such tolerable rates (as certainly it might from *Cape-Florida*, the *Bermudas*, and other parts of the *West Indies*) I say, I cannot but suggest that our more *Wealthy Citizens* of *London*, now *Building*, might be encourag'd to use of it in their *Shops*; at least for *Shelves*, *Comptoirs*, *Chests*, *Tables*, *Wainscot*, &c. It might be done with moderate *Expense*, especially, in some small proportions, and in *Faneering*, as they term it, and *wouldings*, since beside the *everlastingness* of the *wood*, not obnoxious to the *Worms*, and which would also be a means to preserve *cloth*, and other *Ware* from *Moths* and *corruption*; it would likewise be a *Cure*, to reform the *Malignity*, and *corrosiveness* of the *Air*, and even preserve the whole *City*, as if it stood amongst the *Spices* of the



the happy *Arabia*, or the prospects of *Mount Libanus*. Note, that the *Cedar* is of so dry a nature, that it will not well endure to be fastned with *Nails*, from which it usually shrinks, and therefore *Pinns* of the same wood, are better. But what should we say of their building huge *Ships*, and other lesser *Vessels* with this material? 'tis reported that *Sesostris* (that antient *King of Egypt*,) built one of 280 *cubits*, all gilded without and within.

17. The *Sittim* mention'd in holy *Writ*, is believ'd to have been a kind of *Cedar*, of which the most precious *Vensils* were formed; so that when they said a thing was *cedro digna*, the meaning was, *worthy of eternity*.

## C H A P. XXV.

Of the Cork, Ilex, Alaternus, Phyllyrea, Granad, Lentisc, Olive, Myrtle, Jasmine, &c.

Cork.

1. **T**HE Cork [*Suber*] of which there are two sorts (and divers more in the *Indias*) one of a narrower, less jagged leaf and *perennial*; the other of a broader, falling in *Winter*; grows in the coldest parts of *Biscany*, in the North of *New-England*, in the South-West of *France*, especially the second *Species*, fittest for our *Climate*; and in all sorts of ground, dry *Heaths*, *Stony*, and *Rockie-Mountains*, so as the *Roots* will run even above the *Earth* where they have little to cover them; all which considered, methinks we should not despair: We have said where they grow plentifully in *France*; but by *Pliny*, *Nat. Hist. l. 16. c. 8.* it should seem they were since transplanted thither; for he affirms there were none either there, or in *Italy*, in his time: But I exceedingly wonder that *Carolus Stephanus*, and *Cursus* should write so peremptorily, that there were none in *Italy*, where I myself have travell'd through vast *Woods* of them about *Pisa*, *Aquin*, and in divers tracts between *Rome* and the Kingdom of *Naples*. The *Spanish Cork* is a *Species* of the *Enaina*, differing chiefly in the *Leaf*, which is not so prickly; and in the *Bark*, which is frequently, four or five inches thick: The manner of *decortication* thereof is once in two, or three years to strip it in a dry season; otherwise, the intercutaneous *moisture* indangers the *Tree*, and therefore a rainy-season is very pernicious; when the *bark* is off, they unwarpe it before the *fire*, and press it even, and that with weights upon the *convex* part, and so it continues being cold.

2. The uses of *Cork* is well known amongst us both at *Sea* and *Land*, for its resisting both *Water*, and *Air*: The *Fisher-men* who deal in *Nets*, and all who deal with *Liquors*, cannot be without it: Antient Persons prefer it before *Leather* for the *soles* of their *Shoes*,

*Shoes*, being light, dry, and resisting moisture, whence the *German*s name it *Pantoffel-holz* (Slipper-wood) perhaps from the *Greek* Παντός & ξύλον; for I find it first applied to that purpose by the *Grecian* Ladies, whence they were call'd *light-footed*; I know not whether the *Epithete* do still belong to that *Sex*; but from them it's likely the *Venetian* Dames took it up for their monstrous *Choppines*; affecting, or usurping an artificial eminency above *Men*, which *Nature* has denied them. Of one of the sorts of *Cork* are made pretty *Cups*, and other *Vessels*, esteem'd good to drink out of for *Hedical* persons: The *Egyptians* made their *Coffins* of it, which being lin'd with a *resinous* composition, preserv'd their *Dead* incorrupt: The poor People in *Spain*, lay broad *Planks* of it by their *Beds-side*, to tread on (as great Persons use *Turkie*, and *Persian* Carpets) to defend them from the *floor*, and sometimes they line, or *Wainscot* the Walls, and inside of their Houses built of Stone, with this *Bark*, which renders them very warm; and corrects the *moisture* of the Air: Also they employ it for *Bee-Hives*, and to double the insides of their *Contempires*, and leather Cases, wherein they put *Flasquera's* with *Snow* to refrigerate their *Wine*. This *Tree* has beneath the *Cortex* or *Cork*, two other *Coats*, or *Libri*, of which one is *reddish*, which they strip from the *bole* when 'tis fell'd only; and this bears good price with the *Tanner*: The rest of the *wood* is very good firing, and applicable to many other uses of *Building*, *Palisade-work*, &c. The *Ashes* drunk stops the *Bloody-flux*.

3. *Ilex major glandifera* or great *Scarlet-Oak*, (a devoted *Tree* *Ilex*. of old, and therefore *incædua*) thrives manifestly with us; witness His Majesty's *Privy Garden* at *White-Hall*, where once flourish'd a goodly *Tree*, of more than *four-score* years growth, and there was lately a sickly *Impe* of it remaining.

4. By what I have touch'd in the *Chapter* of the *Elms*, concerning the *peregrination* of that *Tree* into *Spain* (where even in *Plinie's* time there were none, and where now they are in great abundance) why should we not more generally endeavour to propagate the *Ilex* amongst us; I mean, that *Baccifera*, which the *Spaniards* call the *Enzina*, and of which they have such *Woods*, and profitable *Plantations*? They are an hardy sort of *Tree*, and familiarly rais'd from the *Acorn*, if we could have them found, and well put-up in *Earth* or *Sand*, as I have found by experience.

5. The *wood* of these *Ilex's* is serviceable for many uses, as *stocks* of *Tools*, *Mallet-heads*, *Mallet-balls*, *Chairs*, *Axletrees*, *Wedges*, *Beetles*, *Pins*, and above all, for *Palisades* us'd in *Fortifications*. Besides, it affords so good *fuel*, that it supplies all *Spain* almost with the best, and most lasting of *Charcoales*, in vast abundance. Of the *first* kind is made the *Painters Lac*, extracted from the *berries*; to speak nothing of that noble *Confection Alkermes*: The *Acorns* of the *first* yield excellent nourishment for *Rustics*, sweet, and little, if at all, inferior to the *Chestnut*; and *this*, and not the *Fagus*, was doubtless the true *Esculus* of the *Antients*, the Food of the *Golden age*. The *wood* of the *Enzina* when old, is curiously chamblet-  
ted,

ted, and embroidered with Natural *vermiculations*, as if it were painted. Note, that the *Kermes* Tree does not always produce the *Coccum*, but near the *Sea*, and where it is very hot; nor indeed when once it comes to bear *Acorns*, and therefore the people do often burn down the old Trees, that they may put forth fresh branches, upon which they find them.

*Alaternus*. 6. The *Alaternus*, which we have lately receiv'd from the hottest parts of *Languedoc* (and that is equal with the heat of almost any *Country* in *Europe*) thrives with us in *England*, as if it were an *Indigene* and *Natural*.

7. I have had the honour to be the first who brought it into *Use*, and reputation in this *Kingdom* for the most beautiful, and useful of *Hedges*, and *Verdure* in the world (the *swiftness* of the *growth* consider'd) and *propagated* it from *Cornwall*, even to *Cumberland*: The seed grows ripe with us in *August*; and the hony-breathing *blossomes* afford an early, and marvellous relief to the *Bees*.

*Phillyrea*. 8. All the *Phillyrea's* (of which are five or six sorts) are yet more *hardy*; which makes me wonder to find the *Angustifolia* planted in *Cases*, and so charily set into the *Stoves*, amongst the *Oranges* and *Lemmons*; when by long *experience*, I have found it equal our *Holly*, in suffering the extreamest rigours of our cruellest *Frosts*, and *Winds*, which is doubtless (of all our *English* Trees) the most insensible and stout.

9. They are (both *Alaternus*, and *this*) rais'd of the *Seeds* (though those of the *Phillyrea* will be long under ground) and being transplanted for *Espalier* hedges, or *Standards*, are to be govern'd by the *Shears*, as oft as there is occasion: The *Alaternus* will be up in one *Month* after it is sown: Plant it out at two years growth, and clip it after *rain* in the *Spring*, before it grows sticky, and whiles the shoots are tender; thus will it form an *hedge* (though planted but in single rows, and at two foot distance) of a yard in thickness, twenty foot high (if you desire it) and furnish'd to the bottom: But for an hedge of this altitude, it would require the friendship of some *Wall*, or a *Frame* of lusty *Poles*, to secure against the *Winds* one of the most delicious objects in nature: But if we could have store of the *Phillyrea folio leviter serrato* (of which I have rais'd some very fine *Plants* from the *Seeds*) we might fear no *weather*, and the *verdure* is incomparable, and all of them *tonfile*.

*Granade*. 10. The Culture of the *Granade* (of which are three sorts) does little differ from that of the *Alaternus*, of which we might raise considerable *Hedges* on all our *Southern* Aspects: They have supported that most unmerciful *Winter* in *sixty three*, without any artifice; and if they yield us their *flowers* for our pains of well *pruning* and *Recision* (for they must diligently be purged of their *wood*) it is a glorious recompence: I plant them in my *Hedge-rows*, even amongst the *Quick*; but to have them thrive, you must loosen the *Earth* at *Roots*, and enrich it both *Spring* and *Autumn*, leaving but a few woody branches: There is no *Tree* so *Adulterous* as this *Shrub*, and best by *Layers*, *Approach*, and *Inarching*,

as



as they call it; and thence 'tis said to marry with *Lawrels*, *Damson*, *Asb*, *Almond*, *Mulberry*, *Citron*, &c. too many (I fear) to hold: If you will plant them in *Gardens* to best advantage, keep them to one *Stem*, and enrich the *mould* with *Hogs dung* well consum'd, which they greatly delight in: Plant it in a warm corner to have *Flowers*; they also sometimes knit into small *Fruit*, but then the *Shrub* must be treated like the *Orange* during the *Winter*.

11. The vulgar *Italian* wild *Myrtil* (though not indeed the *Myrtil*, most *fragrant*) grows high, and supports all *weathers*. I know of one near *fifty* years old, which has been continually *expos'd*; unless it be, that in some exceeding *sharp* Seasons, a little dry *straw* has been thrown upon it; and where they are *smitten*, being cut down near the ground, they put forth, and recover again; which many times they do not in *Pots*, and *Cases*, where the *Roots* are very obnoxious to perish with *mouldiness*. The shelter of a few *Mats*, and *Straw*, secur'd very great Trees (both leaf and colour in perfection) this last Winter also, which were planted *abroad*; whiles those that were carried into the *Conserve*, were most of them lost. *Myrtils* (which are of six, or eight sorts) may be rais'd of *Seeds*; but with great caution; and they seldom prove hardy, nor is it worth the time, being so abundantly encreased of *Layers*: You cannot give these *Shrubs* too much compost, or refreshing. Both *Leaves*, and *Berries* refrigerate, and are very *astringent* and drying, and therefore seldom us'd *within*, except in *Fluxes*: with *Wine*, and *Hony* it heals the noysome *Polypus*, and the powder corrects the rankness of the *Arm-pits*, and *Gousses* as the *French* term it, to which divers of the *Female sex* are subject: The *Berries* mitigate the *Inflammations* of the *Eyes*, consolidate *broken-bones*; and there is an excellent *sweet-water* distil'd from the *leaves* and *flowers*, &c.

12. *Lentiscus*, the *Lentisc*, a very beautiful *ever-green*, will *Lentisc* thrive abroad with us, with a little care and shelter, amongst other *expos'd Shrubs*, and may be propagated of *Suckers*, and *Layers*; and the like may be done by the *Olive*, though it bear no other *Olive*, *Fruit* than the perennial verdure of the *leaves*: Of the *Lentisc* are made the best *Tooth-pickers* in the world, and the *Mastic*, or *Gum* is of excellent use, especially for the *Teeth* and *Gums*.

13. I might to these add *Lignum vite*, or *Arbor Thuya*, which *Thuya* grows of every *Layer*, to a very tall, straight, goodly *Tree*, hardy in all seasons; the wood incomparable for the *Turner* of *Boxes*, *Bowls*, *Cups*, and other curiosities, and the leaf smelling like *Oyntment*; makes one of the best for *green Wounds*, suddenly closing them; so as I wonder we plant it not frequently; the *Ethiopic Seseli*, *Halimus Latifolius*, *Laurus Tinus*, *Celastrus*, &c. fittest for the *Shrubby* part, and under-furniture of our *Ever-green-Groves*, and near our *Gardens* of *Pleasure*. To these we might add (not for their green) the more rare *Exotics*, *Styrax Arbor*, and *Terebynth*, noting by the way, that we have no true *Turpentine* to be bought in our *Shops*, but what is from the *Larch*; whilst *Apothecaries*

varies substitute that which extills from the *Fir-tree*, instead of it :  
But

14. I produce not these *particulars*, and other *amena vireta* already mention'd, as signifying any thing to *Timber*, the main design of this *Treatise* (though I read of some *Myrtils* so tall, as to make *spear-shafts*) but to *exemplifie* in what may be farther added to *Ornament* and *Pleasure*, by a cheap, and most agreeable *industry*. The *Berries* of *Myrtil* were us'd of old in stead of *Peper*, and in some places they dress *Leather* with the *leaves*.

*Jasmine.*

15. The common *white*, and *yellow Jasmine* would flower plentifully in our *Woods*, and as hardy as any of the *Periclimena* : How it is propagated by *submersion*, or *layers*, every *Gard'ner* skills ; and if it were as much employ'd for *Nose-gays*, &c. with us, as it is in *France* and *Italy*, they might make money enough of the *Flowers* : One sorry Tree in *Paris*, where they abound, has been worth to a poor *Woman* near *twenty* shillings in a year.

## C H A P. XXVI.

*Of the Acacia, Arbutus, Bays, Box, Yew, Holly, Juniper, and Laurel-trees.*

*Acacia.*

1. **T**HE *French* have lately brought in the *Virginian Acacia*, which exceedingly adorns their *Walks* : The Tree is hardy against all the invasions of our sharpest seasons, but our high *Winds* ; which by reason of its brittle nature, it does not so well resist ; and the *Roots* (which insinuate, and run like *liquorize* underground) are apt to *emaciate* the *Soil*, and therefore haply not so commendable in our *Gardens*, as they would be agreeable for variety of *Walks* and shade : They thrive well in his *Majesties* new *Plantation* in *St. James's Park*.

*Arbutus.*

2. But why do we thus neglect the *Arbutus*, and make that such a *rarity*, which grows so common, and so naturally in *Ireland* ? It is indeed with some difficulty rais'd from the *Seeds* ; but it may be propagated from the *Layers*, grows to a goodly Tree ; is patient of our *climat* unless it be very severe Weather, and may be contriv'd into most beautiful *Hedges* : 'tis said this Tree grows to a vast bulk and altitude in *Mount Athos*, and other Countries : *Virgil* reports it will *inoculate* with the *Nut* ; and I find *Bauhinus* commends the *Coals* for *Goldsmiths* works, and the *Poet*

*Arbutus* Harrows and the mystic Fan.

*Arbutus* crates, & mystic Vannus Tacchi.

Georg. 1.

*Bays.*

3. *Laurus Vulgaris*, *Bays*, are increas'd both of their *Suckers*, and *Seeds* or *Berries*, which should be dropping-ripe ere gather'd :  
Pliny

*Pliny* has a particular *process* for the ordering of the *Seeds*, and it is not to be rejected: Which is, the gathering the *Berries* in *January*, and spreading them till their sweat be over; then he puts them in *dung* and sows them: As for the steeping in *Wine*, *Water* does altogether as well; others wash the *seeds* from their *mucilage*, by breaking, and bruising the glutinous *berries*; then sow them in *March* by scores in a heap; and indeed so they will come up in *clusters*, but nothing so well, nor fit for *transplantation*, as where they are *interr'd* with a competent scattering, so as you would furrow *Pease*: Both this way, and by setting them apart (which I most commend) I have rais'd multitudes, and that in the *Berries*, without any farther *preparation*; only for the first two years, they would be defended from the piercing *winds*, which frequently destroy them; and yet the scorching of their tender *leaves* ought not make you despair, for many of them will recover beyond expectation.

4. This *aromatic Tree* greatly loves the *shade*, yet thrives best in our hottest *gravel*, having once pass'd those first difficulties of *Age*, and *Culture* about the *Roots* wonderfully augment its growth; so as I have seen *Trees* near thirty foot high of them; and almost two foot *diameter*. They are fit also both for *Arbour*, and *Palisade-work*, so the *Gard'ner* understand when to prune, and keep it from growing too *woody*. The *Berries* are *emollient*, sovereign in affections of the *Nerves*, *Colics*, *Gargarisms*, *Baths*, *Salves*, *Perfumes*, and some have us'd the leaves instead of *Cloves*.

5. *Buxus*, the *Box*, which we begin to *proscribe* our *Gardens Box*. (and indeed *Bees* are no friend to it) should not yet be banish'd from our care; because the excellency of the *wood*, does commute for the unagreeableness of its smell: therefore let us furnish our cold, and barren *Hills*, and declivities with this useful *Shrub*, I mean the taller sort, for I meddle not here with the *dwarf* and more *touffle*; It will increase abundantly of *slips* set in *March*, and towards *Barthol'mew-tide*.

6. The *Turner*, *Ingraver*, *Carver*, *Mathematical-Instrument*, *Comb*, and *Pipe-makers* (*Si buxos inflare juvat—Virg.*) give great prices for it by *weight*, as well as measure; and by the *seasoning*, and divers manner of *cutting*, *vigorous insulations*, *politure* and *grinding*, the *Roots* of this *Tree* (as of even our common, and neglected *Thorn*) do furnish the *Inlayer*, and *Cabinet-makers* with pieces rarely *undulated*, and full of variety. Also of *Box* are made *Wheels* or *Shivers* (as our *Ship-Carpenters* call them) and *Pins* for *Blocks* and *Pullies*; *Pegs*, for *Musical Instruments*; *Nut-crackers*, *Weavers-Shuttles*, *Hollar-sticks*, *Bump-sticks*, and *Dressers* for the *Shoo-maker*, *Rulers*, *Rolling-pins*, *Pestles*, *Mall-balls*, *Beetles*, *Topps*, *Tables*, *Chest-men*, *Skrews* male, and female, *Robins* for *Bone-lace*, *Spoons*, nay the stoutest *Axle-trees*; but above all,



Box-Combs bear no small part  
In the Militia of the Female Art;  
They tie the Links which hold our Gallants fast,  
And spread the Nits to which fond Lovers halt.

Non ultima belli  
Arma Puellaris; Laqueos hæc nectit Amantum,  
Et venatricis disponit versus Eoræ.

Coulcii Pl. l. 6.

7. The Chymical oyl of this wood has done the feats of the best *Gnajaum* (though in greater quantity) for the Cure of Venereal Difeases, as one of the most expert Physicians in Europe has confess'd. The oyl asswages the Tooth-ach.

*Yew.*

8. Since the use of *Bows* is laid aside amongst us, the propagation of the *Yew-tree* (of which we have two sorts, and other places reckon more, as the *Arcadian* black, and red; the yellow of *Ida*, infinitely esteem'd of old) is likewise quite forborn; but the neglect of it is to be deplor'd; seeing that (besides the rarity of it in *Italy*, and *France*, where but little of it grows) the barrenest grounds, and coldest of our Mountains (for

*Aquilonem & frigora taxi*) might be profitably replenish'd with them: I say, profitably, for, besides the use of the wood for *Bows*

*Ilyreæ taxi torquentur in arcus.* (for which the close, and more deeply dy'd is best) the foremention'd Artists in *Box* most gladly imploy it: And for the Cogs of Mills, Posts to be set in moist grounds, and everlasting *Axle-trees*, there is none to be compar'd with it; likewise for the bodits of *Lutes*, *Theorbas*, *Bowles*, *Wheels*, and *Pins* for *Pullies*; yea, and for *Tankards* to drink out of; whatever *Pliny* report concerning its *Shade*, and the stories of the Air about *Thasus*, the Fate of *Catonius* mention'd by *Cæsar*, and the ill report which the *Fruit* has vulgarly obtain'd in *France*, *Spain*, and *Arcadia*; But,

How are poor Trees traduc'd?

Quam multa Arboribus tribuuntur crimina falsa?

9. The *Toxic* quality was certainly in the *Liquor*, which those good Fellows tippl'd out of those Bottles, not in the nature of the wood; which yet he affirms is cur'd of that *Venemous* quality, by driving a *brass-wedge* into the Body of it: This I have never tri'd, but that of the *Shade*, and *Fruit* I have frequently, without any deadly, or noxious effects: so that I am of opinion, that *Tree* which *Sebins* calls *Smilax*, and our *Historian* thinks to be our *Tax* was some other wood; and yet I acknowledge that it is esteem'd noxious to *Cattle* when 'tis in the *Seeds*, or newly sprouting. I may not in the mean time omit, what has been said of the true *Taxus* of the *Antients*, for being a *mitisferous* plant: Dr. *Baldus* President of the Medical Garden at *Pisa* in *Tuscany*, (where they have this curiosity) affirms, that when his *Gard'ners* clip it (as sometimes they do) they are not able to work above half an hour at a time, it makes their heads so ake; but the leaves of this *Tree* are more like the *Fir*, and is very bushy, furnish'd with leaves from the very root, and seeming rather an *Hedge* than a *Tree*, though it grow very tall.

10. This English *Yew-tree* is easily produc'd of the *Seeds*, wash'd and

and cleas'd from their *mucilage*, then buried and dry'd in *Sand* a little moist, any time in *December*, and so kept in some *Vessel* in the *House* all *Winter*, and in some cool-shady-place abroad, all the *Summer*, sow them the *Spring* after: Some bury them in the ground like *Haws*; It will commonly be the second *Winter* ere they peep, and then they rise with their *caps* on their *heads*: Being three years old, you may *transplant* them, and form them into *Standards*, *Knobs*, *Walks*, *Hedges*, &c. in all which works they succeed marvellous well, and are worth our patience for their *perennial verdure*, and *durableness*: I do again name them for *Hedges*, preferable for beauty, and a stiff defence, to any plant I have ever seen.

11. He that in *winter* should behold some of our highest *Hills* in *Surrey*, clad with whole *Woods* of these two last sort of *Trees*, for divers *Miles* in *circuit* (as in those delicious *Groves* of them, belonging to the *Honourable*, my noble Friend Sir *Adam Brown* of *Bech-worth-Castle*, from *Box-hill*, and near our famous *Mole* or *Swallow*) might without the least violence to his *Imagination*, easily phantse himself transported into some new, or enchanted *Country*; for, if any *spot* of *England*,

———— 'Tis here  
Eternal *Spring*, and *Summer* all the year.

Hic ver perpetuum, atque aliis mensibus æstas.

12. But, above all the natural *Greens* which enrich our home-*Holly*. *born* store, there is none certainly to be compar'd to the *Agrifolium* (or *Acuifolium* rather) our *Holly*, inasmuch as I have often wonder'd at our *curiosity* after *forreign* Plants, and expensive *difficulties*, to the neglect of the *culture* of this *virgifer*, but *incomparable* tree; whether we will propagate it for *Use* and *Defence*, or for *sight* and *Ornament*.

A Hedge of *Holly*, Thieves that would invade,  
Repulses like a growing *Palisade*;  
Whole numerous leaves such *Orbit* *Greens* invest,  
As in deep *winter* do the *Spring* arrest.

———— Mala furta hominum densis mucronibus arcens  
Securum defendit inexpugnabilis Hortum;  
Ævornaque simul, toto spectabilis anno,  
Et numero, & viridi foliorum luce nitentem.

Coulcii Pl. l. 6.

13. Is there under *Heaven* a more glorious and refreshing object of the kind, than an impregnable *Hedge* of near three hundred *foot* in length, nine foot high, and five in diameter; which I can shew in my poor *Gardens* at any time of the year, glitt'ring with its arm'd and vernish'd leaves? the taller *Standards* at orderly distances, blushing with their natural *Coral*: It mocks at the rudest assaults of the *Weather*, *Beasts*, or *Hedge-breakers*,

Et illum nemo impune lacessit.

It is with us of two eminent kinds, the prickly, and smoother leav'd, or as some term it, the *Free-holly*, not unwelcome when tender, to *sheep*, and other *Cattel*: There is also of the *White-berried*, and a *Golden variegated*: which proceeds from no difference in the *Species*, but accidentally and *Nature* *Loose*, as most such *Variegations*

tions do; since we are taught how to effect it *artificially*, namely, by sowing the *seeds*, and planting in *gravelly* soil, mixed with store of *Chalke*, and pressing it hard down; it being certain, that they return to their *native Colour* when sown in richer mould.

14. I have already shew'd how it is to be rais'd of the *Berries*, (of which there is a sort bears them *yellow*) when they are ready to drop, this only omitted, that they would first be freed from their tenacious, and glutinous *Mucilage* by being wash'd, and a little bruised, then dry'd with a Cloth; or else bury them as you do the *Tew*, and *Hips*; and let our *Forester* receives this for no common secret, and take notice of the effect: Remove them also after three, or four years; but if you plant the *Sets* (which is likewise a commendable way, and the *Woods* will furnish enough) place 'em *Northwards*, as they do *Quick*. Of this, might there living *Pales*, and *Enclosures* be made (such as the Right Honourable my Lord *Dacres*, somewhere in *Sussex*, has a *Park* almost environ'd with, able to keep in any *Game*, as I am credibly inform'd) and cut into *square Hedges*, it becomes impenetrable, and will thrive in *bottest*, as well as the *coldest* places. I take thousands of them four inches long, out of the *Woods* (amongst the fall'n leaves whereof, they sow themselves) and so Plant them; but this should be before the *Cattel* begin to crop them, especially *Sheep*, who are greedy of them when tender: Stick them into the ground in a *moist* season, *Spring*, or *early Autumn*; especially the *Spring*, shaded (if it prove too hot and scorching) till they begin to shoot of themselves, and in very sharp Weather, and during our *Eastern Etesians*, cover'd with *dry straw*, or *Haume*; and if any of them seem to perish, cut it close, and you shall soon see it revive. The lustier, and bigger the *Sets* are, the better, and if you can procure such as are a Thumb's breadth thick, they will soon furnish into an *Hedge*. At *Dungeness* in *Kent*, they grow naturally, amongst the very *beach* and *pibbles*: but if your ground be stiff, loosen it with a little fine gravel: This rare *Hedge* (the boast of my *Villa*) was planted upon a *burning Gravel*, expos'd to the *meridian Sun*.

15. True it is, that *time* must bring this *Tree* to perfection; it does so to all things else, & *posteritati pangimus*. But what if a little *culture* about the *Roots* (not *dunging*, which it abhors) and frequent stirring of the *mould*, double its growth? We stay *seven years* for a tolerable *Quick*, it is worth staying it *thrice*, for this, which has no *Competitor*.

16. And yet there is an expedient to effect it more insensibly, by planting it with the *Quick*: Let every *fifth*, or *sixth* be an *Holly-set*; they will grow up infallibly with your *Quick*, and as they begin to spread, make way for them, by extirpating the *White-thorn*, till they quite domineer: Thus was my *Hedge* first Planted, without the least interruption to the *Fence*, by a most pleasant *Metamorphosis*. But there is also another, not less applauded, by laying along well rooted *Sets* (a yard, or more in length) and stripping off the *leaves* and *branches*: these cover'd with a competent depth of earth, will send forth innumerable *suckers*, which will suddenly advance into an *Hedge*.

17. The



17. The *Timber* of the *Holly* (besides that it is the *whiteſt* of all hard *woods*, and therefore us'd by the *Inlayer*, especially, under thin plates of *Ivory*, to render it more conspicuous) is for all sturdy *uſes*; the *Mill-Wright*, *Turner*, and *Engraver* prefer it to any other: It makes the best *handles*, and *ſtocks* for *Tools*, *Flails*, *Riding-rods* the best, and *Carters whips*; *Bowles*, *Shivers*, and *pins* for *Blocks*; Also it excels for *Door-bars* and *bolts*; and as of the *Elm*, ſo of this eſpecially, they made even *hingcs*, and *books* to ſerve inſtead of *Iron*, and of the *Bark* is compos'd our *Bird-lime* thus.

18. Pill a good quantity of the *Bark* about *Midſummer*, fill a *Veſſel* with it, and put to it *Spring-water*; then boyl it, 'till the *grey*, and *white bark* riſe from the *green*, which will require near twelve hours boyling; then taking it off the *fire*, ſeparate the *barks*, the *water* firſt well drained from it: Then lay the *green bark* on the *Earth*, in ſome cool *Vault* or *Cellar*, covering it with any ſort of *green*, and rank *weeds*, ſuch as *Dock*, *Thiſtles*, *Hemlock*, &c. to a good thickneſs: Thus let it continue near a *fort-night*, by which time 'twill become a perfect *mucilage*: then pound it all exceedingly in a ſtone *mortar*, 'till it be a tough *paſt*, and ſo very fine, as no part of the *bark* be diſcernable: This done, *waſh* it accurately well in ſome running ſtream of *Water*, as long as you perceive the leaſt *ordure* or *motes* in it, and ſo reſerve it in ſome earthen *pot*, to purgè and *ferment*, ſcumming it as often as any thing ariſes for four, or five days, and when no more *filth* comes, change it into a *freſh* *Veſſel* of earth, and reſerve it for uſe, *Thus*: Take what quantity you pleaſe of it, and in an earthen *pipkin*, add a *third* part of *Capons*, or *Goose-greafe* to it, well clarified; or *Oyl* of *Walnuts*, which is better: Incorporate theſe on a gentle *fire*, continually ſtirring it 'till it be *cold*, and thus your *Compoſition* is finiſh'd. But to prevent *Froſts* (which in ſevere weather will ſometimes invade it on the *Rods*.) take a quarter of as much *Oyl* of *Petroleum*, as you do of *Greafe*, and no cold whatever will congeal it. The *Italians* make their *Viſchio*, of the *Berries* of the *Myſſels* of *Trees*, treated much after the ſame manner; but then they mix it with *Nut-oyl*, an ounce to a pound of *Lime*, and taking it from the *fire*, add half an ounce of *Turpentine*, which qualifies it alſo for the *Water*. Great quantities of *Bird-lime* is brought to us out of *Turkie*, and from *Damaſcus*; which ſome conceive to be made of *Sebeſſens*, finding ſometimes the kernels: This *lime* is of a greener colour, ſubject to *Froſts*, and impatient of *Wet*, nor will laſt above a *year* or two good: Another ſort comes alſo out of *Syria*, of a *yellow* hue; Likewiſe from *Spain*, whiter than the reſt, which will reſiſt the *water*, but is of an ill ſcent. I have been told that the *Cortex* of our *Lantana*, or *Wayſaring* ſhrub, will make as good *Bird-lime* as the beſt. But, let theſe ſuffice, being more than as yet, any one has publiſh'd. The ſuperiour *Leaves* of *Holly-Trees*, dry'd to a fine powder, and drunk in *White-wine*, is prevalent againſt the *ſtone*, and cures *Fluxes*; and a dozen of the mature *Berries*, being ſwallow'd, purge *Phlegm* without danger.

To

To which the learned Mr. Ray (*in Append. Plant. Angl.*) adds a *Xythogalum*, made of *Milk* and *Beer*, in which is boil'd some of the most pointed *leaves*, for asswaging the torment of the *Colic*, when nothing else has prevail'd.

*Juniper.*

19. Of *Juniper* we have *three sorts*, (*Male*, *Female*, *Dwarf*) whereof *one* is much taller, and more fit for Improvement: The *mood* is *yellow*, and being cut in *March*, sweet as *Cedar*, whereof it is accounted a *spurious* kind; all of them difficult to remove with success; nor prosper they being shaded much, or over-drip'd.

20. I have rais'd them abundantly of their *seeds* (neither *wa-tring*, nor *dunging* the *soil*) which in two months will peep, and being govern'd like the *Cypress*, apt for all the employments of that beautiful Tree: To make it grow *tall*, *prune*, and cleanse it to the very *stem*, the *male* best. The discreet loosening of the *Earth* about the *Roots* also, makes it strangely to prevent your expectations, by suddenly spreading into a *bush* fit for a thousand pretty Employments; for coming to be much unlike that which grows *wild*, and is subject to the treading, and cropping of *Cattle*, &c. it may be form'd into most beautiful, and useful *Hedges*: My *Brother* having cut out of one only Tree, an *Arbour* capable for *three* to sit in: It was at my last measuring *seven* foot square, and *eleven* in height; and would certainly have been of a much greater altitude, and farther spreading, were it not continually kept *shorn*: But what is most considerable, is, the little time since it was *planted*, being yet hardly *ten years*, and then it was brought out of the *common* a slender *Bush*, of about *two foot* high: But I have experimented a proportionable improvement in my own *Garden*, where I do mingle them with *Cypress*, and they would perfectly become their stations, where they might enjoy the *Sun*, and may very properly be set, where *Cypress* does not so well thrive, namely, in such *Gardens*, and *Courts* as are open to the *Eddy-Winds*, which indeed a little discolours our *Junipers* when they blow *Easterly* towards the *Spring*, but they constantly recover again; and besides, the Shrub is *tonfible*, and may be shorn into any form. I wonder *Virgil* should condemn its shadow, I suspect him mis-reported: For,

21. The *Berries* afford (besides a tolerable *Pepper*) one of the most universal *Remedies* in the world, to our crazy *Forester*; The *Berry* swallow'd only, instantly appeaseth the *Wind-Colic*, and in decoction most *sovereign* against an inveterate *Cough*: They are of rare effect being steeped in *Beer*. The *Water* is a most singular *specificque* against the *Gravel* in the *Reins*; But all is comprehended in the virtue of the *Theriacle*, or *Electuary*, which I have often made for my poor *Neighbours*, and may well be term'd the *Foresters Panacea* against the *Stone*, *Rheum*, *Phthisic*, *Dropfie*, *Jaundies*, inward *Impostumes*, nay, *Palsie*, *Gout*, and *Plague* it self taken like *Venice-Treacle*. Of the extracted *Oyl* (with that of *Nuts*) is made an excellent good *Vernish* for *Pictures*, for *Wood-work*, and to preserve *polish'd Iron* from the *rust*. The *Gum* is good to rub on *parchment* to make it bear *Ink*, and the *Coals*, which

which are made of the *Wood*, endure the longest of any : See *St. Hieron. ad Fabiolam* upon that expression *Psal. 120. v. 4*. If it arrive to full growth, it is *Timber* for many curious works ; for *Tables, Chests, small Carvings and Images, spoons*, wholesome to the mouth ; *spits* to roast *meat* on, to which it gives a rare *taste*, but it should be of old, and dry wood ; nay, I read of some large enough for *beams, and rafters*. The very *Chips* render a whole some *perfume* within doors, as well as the dusty *blossoms* in *Spring* without.

22. And since we now mention'd *Pepper*, it is by the most prudent, and princely care of his *Majesty*, that I am assur'd of a late solemn *Act of Council*, enjoining the preserving of that incomparable *Spice*, which comes to us from *Jamaica* under that denomination ; though in truth it be a mixture of so many *Aromatics* in one, that it might as well have been call'd *Cinamon, Nutmeg or Mace*, to every of which it seems something allied : And that there is not only prohibited the destruction of these *Trees* (for it seems some *Prodigals* us'd to cut them down, for the more easie gathering) but order taken likewise for their *propagation*, and that *Affays, and Samples* be from time to time sent over, what other *Fruits, Trees, Gums* and *Vegetables* may there be found, and which I prognostick will at last also incite his *Majesty*, and the *Planters* there, to think of procuring *Cinamon, Cloves* and *Nutmeg-trees* indeed, from the *East-Indias*, and what other useful *Curiosities* will not approach our *Northern Bear* (and that are *incicrurables* amongst us) and to plant them in *Jamaica*, and other of his *Majesties Western Islands*, as a more safe, and frugal expedient to humble our *emulous Neighbours* ; since there is nothing in their *Situation*, or defect of *Natures* benignity, which ought in the least to discourage us : And what if some of the *Trees* of those *Countrys* (especially such as aspire to be *Timber*, and may be of improvement amongst us) were more frequently brought to us likewise here in *England* ; since we daily find how many rare *Exotics*, and strangers with little care, become *endeniz'd*, and so contented to live amongst us, as may be seen in the *Platanus, Constantinople-Chest-nut*, the greater *Glandiferous Ilex, Cork, Nux Vesicaria* (which is an hard *Wood*, fit for the *Turner, &c.*) the *Styrax, Bead-tree*, the famous *Lotus, Virginian Acacia, Guaicum Patavinum, Palinurus, Cypress, Pines, Fir*, and sundry others, which grow already in our *Gardens*, expos'd to the *Weather* ; and so doubtless would many more : So judiciously observ'd is that of the learned *Author of the History of the Royal Society, Part. 3. Sect. 28*. 'That whatever attempts of this nature have succeeded, they have redounded to the great advantage of the *Undertakers*. The *Orange of China* being of late brought into *Portugal*, has drawn a great *Revenue* every year from *London* alone. The *Vine of the Rubene*, taking root in the *Canaries*, has produc'd a far more delicious juyce, and has made the *Rocks, and Sun-burnt Ashes* of those *Islands*, one of the richest spots of *Ground* in the *World*. And I will also in-



stance in that which is now in a good forwardness: *Virginia* has already given *Silk* for the cloathing of our *King*; and it may happen hereafter, to give *Cloaths* to a great part of *Europe*, and a vast *Treasure* to our *Kings*; If the *Silk-worms* shall thrive there (of which there seems to be no doubt) the profit will be inexpressible. We may guess at it, by considering what numbers of *Caravans*, and how many great *Cities* in *Persia*, are maintain'd by that *Manufacture* alone, and what mighty *Customs* it yearly brings unto the *Sophi's* Revenue. Thus He; And to return to that of *Trees*, and *Plants*, the Industry we have recommended, would questionless in less than half an *Age*, produce us wonders, by introduction, if not of quite different, yet of better kinds, and such variety for pulchritude, and sweetness; that when by some Princely Example, our late *Pride*, *Effeminacy*, and *Luxurie* (which has to our vast charges, excluded all the *Ornaments* of *Timber*, &c. to give place to *Hangings*, *Embroideries*, and foreign *Leather*) shall be put out of Countenance, we may hope to see a new face of things, for the encouragement of *Planters* (the more immediate Work of *God's* hands) and the natural, wholesome, and ancient use of *Timber*, for the more lasting occasions, and furniture of our *Dwellings*: And though I do not speak all this for the sake of *Joy-stools*, *Benches*, *Cup-boards*, *Massy Tables*, and *Gigantic Bed-steds*, the hospitable *Utensils* of our fore-Fathers; Yet I would be glad to encourage the *Carpenter*, and the *Joyner*, and rejoice to see, that their *Work*, and *Skill* do daily improve; and that by the Example, and application of his *Majesties Universities*, and *Royal Society*, the *Restoration* and *Improvement* of *Shipping*, *Mathematical*, and *Mechanical Arts*, the use of *Timber* grows daily in more reputation: And it were well if *Great Persons* might only be indulg'd to enrich, and adorn their *Palaces* with *Tapistry*, *Damasc*, *Velvet*, and *Persian* furniture, whilst by some wholesome *Sumptuary Laws*, the universal excess of those Costly, and *Luxurious Moveables*, were prohibited meaner Men, for divers politic Considerations and Reasons, which it were easie to produce; but by a less influence than severer *Laws*, it will be very difficult, if not altogether impossible, to recover our selves from a softness, and vanity, which will in time not only effeminate, but undo the Nation.

*Laurel.* 23. But to *Crown* all, I will conclude with the *Laurel*, or *Cherry-Bay*, which by the Use we commonly put it to, seems as if it had been only destin'd for *Hedges*, and to cover bare *Walls*; whereas, being planted upright, and kept to the *Standard*, by cutting away the collateral *Branches*, and maintaining one *stem*, it will rise to a very considerable *Tree*; and (for the first twenty years) resembling the most beautiful-headed *Orange* in shape, and verdure, arrive in time, to emulate even some of our lusty *Timber-trees*; so as I dare pronounce the *Laurel* to be one of the most proper, and ornamental *Trees* for *Walks*, and *Avenues* of any growing.

24. Pity it is they are so abus'd in the *Hedges*, where the lower Branches

Branches growing *stickie*, and *dry*, by reason of their frequent, and unseasonable *cutting* (with the *genius* of the *Tree*, which is to spend much in wood) they never succeed, after the first *six*, or *seven* years; but are to be new *planted* again, or abated to the very *Roots* for a fresh *shote*.

25. But would you yet improve the *Standard* which I celebrate, to greater, and more speedy exaltation? bud your *Laurel* on the *Black-Cherry stock* to what height you please; This I had from an ocular testimony, who was more than somewhat doubtful of such *Alliances*, though something like it in *Palladius* speaks it not so impossible;

A Cherry Graft on Laurel-stock does stain  
The Virgin Fruit in a deep double grain.

Instruitur lauro Cerasus; partique coacta  
Tingit adoptivus virginis ora pudor.

26. They are rais'd of the *Seeds*, or *Berries* with extraordinary facility, or propagated by *Layers*, *Talcs*, and *cuttings*, set about the later end of *August*, or earlier at *St. James-tide*, wherever there is shade and moisture. I find little concerning the *Mechanical uses* of the *Laurel*; but than its *Attributes* of *old*, there was nothing more glorious and magnificent; For,

From Laurel chew'd the Pythian Priests's role,  
Events of future Actions to disclose.  
Laurel Triumphant Generals did wear,  
And Laurel Heralds in their hands did bear.  
Poets ambitious of un fading praise,  
Phœbus, the Muses all are crown'd with Bays.  
And Virtue to her foes the Prize does name  
Symbol of Glory, and immortal Fame.

In sacros Phœbi tripodas, tu Sidera sentis,  
Et casus aperis verum præfaga futuro.  
Te juvat armorum strepitus, clangorque Tubarum;  
Perque acies medias, sævique pericula belli,  
Accendis bellantium animos; te Cynthia ipse,  
Te Muses, Vatisque sacri optavere Coronam:  
Ipsa suis Virtus te spem proponit alumnis,  
Tantum servatus valuit pudor, & bona fama.

Rapinus

I have now finish'd my *Planting*: A word or two concerning their *Preservation*, and the *Cure* of their *Infirmities*.

T<sub>2</sub> CHAP.

## C H A P. XXVII.

## Of the Infirmities of Trees.

Infirmities.

THE Diseases of Trees are various, according to the Rustick Rhyme,

The Calf, the Wind-shoc and the Knot,  
The Canker, Scab, Scurf, Sap and Rot.

Affecting the several parts: These invade the Roots; *Stony*, and *Rockie* grounds, *Ivy*, and all *Climbers*, *Weeds*, *Suckers*, *Fern*, *Wet*, *Mice*, *Moles*, *Winds*, &c. to these may be added *Siderations*, and even *Plagues*, *Tumours*, *Distortions*, *Lacrymations*, *Tophi*, *Gouts*, *Carbuncles*, *Ulcers*, *Crudities*, *Fungosities*, *Gangreens*, and an *Army* more, whereof some are hardly discernable, yet *Enemies*, which not foreseen, makes many a bargain of *standing-wood* (though seemingly fair) very costly ware.

1. *Weeds*, are to be diligently pull'd up by hand after *Rain*, whiles your *Seedlings* are very young, and till they come to be able to kill them with *shade*, and *over-dripping*: And then are you for the *obstinate*, to use the *Haw*, *Fork*, and *Spade*, to extirpate *Dog-grass*, *Bear-bind*, &c.

2. *Suckers* shall be duly eradicated, and with a sharp *spade*, dexterously separated from the *Mother-root*, and transplanted in convenient places for *propagation*, as the *Season* requires. Here *Note*, that *Fruit* grafted upon *Suckers*, are more dispos'd to produce *Suckers*, than such as are propagated upon good *Stocks*.

3. *Fern*, is best destroy'd by striking off the *Top*, as *Tarquin* did the heads of the *Poppies*: This done with a good *wand*, or *cudgel*, at the decrease in the *Spring*, and now and then in *Summer*, kills it in a year or two, beyond the vulgar way of *Mowing*, or *burning* which rather encreases, than diminishes it.

4. Over-much *Wet* is to be drain'd by *Trenches*, where it infects the *Roots* of such kinds as require drier ground: But if a *drip* do fret into the body of a *Tree* by the head (which will certainly decay it) cutting first the place smooth, stop, and cover it with *loam* and *hay*, or a *cercloth*, till a new *bark* succeed. But not only the *Wet*, which is to be diverted by *Trenching* the ground, is exitial to many *Trees*, but their *repletion* of too abundant *nourishment*; and therefore sometimes there may be as much occasion to use the *Lancet*, as *Phlebotomie*, and *Venesection* to *Animals*; especially if the *Hypothesis* hold, of the superfluous *moisture's* descent into the *Roots*, to be re-concocted; but where, in case it be more copious than can be there elaborated, it turns to corruption, and sends up a tainted *juice*, which perverts the whole *habit* of the *Tree*: In this exigence therefore, it were perhaps more counsellable, to draw it out by a deep *Incision*, and to depend upon a new



new supply, than upon confidence of correcting this evil quality, by other medications, to let it perish. These infect the Bark; *Bark-bound, Teredo, or Worm, Conys, Moss, Ivy, &c.*

5. The *Bark-bound* are to be released by drawing your *knife* rind-deep from the *Root*, as far as you can conveniently, drawing your *knife* from the *top* downwards half-way, and at a small distance, from the bottom upwards, the other half; this, in more places, as the bulk of the *stem* requires; and if crooked, cut deep, and frequent in the *ham*; and if the *gaping* be much, filling the *rift* with a little *Cow-dung*; do this on each side, and at *Spring, February or March*: also cutting off some *branches* is profitable; especially such as are *blasted* or *lightning-struck*: If (as sometimes also) it proceed from the *baking* of the *Earth* about the *stem*, lighten, and stir it.

6. The *Teredo, Cossi*, and other *Worms*, lying between the *Body*, and the *Bark*, poyson that passage to the great prejudice of some *Trees*; but the *holes* being once found, they are to be taken out with a light *Incision*, the wound covered with *loam*; and the *Wood-pecker*, and other *Birds*, often pitching upon the *stem* (as you may observe them) when knocking with their *bills*, mark that the *Tree* is infected, at least, between the *Bark*. But there are divers kinds of these *εὐλόφαιοι*, of which the *πρόδον* or *Tarmes* we have mentioned, will sometimes make such a noise in a *Tree*, as to awaken a sleeping man: The more *rugous* are the *Cossi*, of old had in *delicis* amongst the *Epicures*, who us'd to fatten them in *floure*; and *this*, (as *Tertullian*, and *S. Hierom* tell us) was the chief food of the *Hierophanta Cereris*; as they are at this day a great *regalo* in *Japan*: In the mean time, experience has taught us, that *Millipedes* Wood-lice (to be plentifully found under old *timber-logs*, being dry'd, and reduc'd to *Powder*, and taken in drink) are an admirable *specific* against the *Jannidies, Scorbuts*, to purifie the *blood*, and clarify the *sight*.

*Trees* (especially *Fruit-bearers*) are infested with the *Measels*, by being burned, and scorched with the *sun* in great drouths: To this commonly succeeds *lousiness*, which is cur'd by boring an *hole* into the principal *root*, and pouring in a quantity of *Brandy*, stopping the *Orifice* up with a *Pin* of the same *Wood*.

*Crooked Trees* are reform'd by taking off or topping the *preponderers*, whilst charg'd with *Leaves* or *Wood*.

*Excorticated* and bark-bared *Trees*, may be preserved by nourishing up a *shoot* from the foot, or below the *stripped* place, and inserting it into a *slit* above the *wounded* part; to be done in the *Spring*, and secur'd from air, as you treat a *Grass*: This I have but of the very industrious *Mr. Cook* p. 48. But *Dr. Merret* brought us in this Relation to the *R. Society*, That making a square *section* of the *Rinds* of *Ash*, and *Sycamore* (*March 1664.*) whereof three sides were cut, and one not, the success was, that the whole *Bark* did *unite*, being bound with pack-thread, leaving only a *Scar*: But being separated intirely from the *Tree*, namely several parts of the *Bark*, and at various depths, leaving on some part

part of the *Bark*, others cut to the very *Wood* it self, being tied on as the former, a new *Rind* succeeded in their place; but what was cover'd over beyond the places of *Incision* with *Diachylon Plaster*, and also bound as the rest, did within the space of three weeks, unite to the *Tree*, though with some shriveling and scar: The same *Experiment* try'd about *Michaelmas*, and in the *Winter*, came to nothing: Where some *Branches* were *decorticated* quite round, without any *Union*, a withering of the *Branch* beyond the *Incision*, ensu'd: Also a *Twig* separated from a *Branch*, with a sloping cut, and fastn'd to it again in the same posture, bound, and cover'd with the former *Plaster*, wither'd in three days time.

Dr. Plot speaks of an *Elm* growing near the *Bowling-green* at *Magdalen College*, quite round *disbark'd*, almost for a *Yard* near the ground, which yet flourishes exceedingly; upon which he dilates into an accurate discourse, how it should possibly be; all *Trees* being held to receive their nutrition between the *Wood*, and the *Bark*, and to perish upon their separation; this *Tree* being likewise *hollow*, as a *drum*, and its out-most surface (where *decor-ticated*) dry, and dead? The solution of this *Phenomenon* (and to all appearance, from the verdant head) could not have been more philosophically resolv'd, than by the *Hypothesis* there produced by the *Doctor*, who assures me, he was yet deliberating whether the *Tree* being *hollow*, it might not possibly proceed from some other *latent* cause, as afterwards he discover'd; when having obtain'd permission to open the *body* of it, he found another *Elm*, letting down its *Stem* all the *length* of this empty *Cave*, and striking *Root* when it came to the *Earth*, from whence it deriv'd nourishment, maintains a flourishing top, and has (till now) pass'd for a little *miracle*, as it still may do for a thing *extraordinary*, and rare enough; considering not only its passage, and how it should come there, unless haply some of the *Samers*, or *Seed* of the old *Tree* (when pregnant) should have luckily fallen down within the hollow pipe, or (as might be conjectur'd) from some *Sucker* springing of a juicy *Root*, but the strange incorporating of the superiour part of the *bole*, with the old hollow *Tree* which embraces it; not by any perceptible *Roots*, but as if it were but *one body* with it, whilst the rest of the vaginated stem touches no other part of the whole *Cavity*, till it comes to the *ground*; This being besides very extraordinary, that a *Tree*, which naturally grows *taper* as it approaches the top, this should swell, and become *bigger* there, than it is below. But this the *Doctor* will himself render a more minute *Account* of in the next *Impression* of that excellent *Piece* of his; nor had I anticipated it on this occasion, but to let the world know (in the mean time) how ingenuously ready he is, to acknowledge the *Mistake*, as he has been successful in discovering it.

*Deer*, *Conies*, and *Hares* by barking the *Trees* in hard *Winters*, spoil very many tender *Plantations*: Next to the utter destroying them, there is nothing better than to anoint that part which is within their reach, with *Serpus humanum*, tempered with a little

*Water*,

*Water*, or *Urine*, and lightly brushed on; this renewed after every great *Rain*: But a *cleanlier* than this, and yet which *Conies*, and even *Cattel* most abhor, is to water, or sprinkle them with *Tanners Liquor*, viz. That, which they use for dressing their *hides*; also to tye *Thumb-bands* of *Hay* and *Straw*, round them as far as they can reach.

8. *Moss*, is to be rubb'd, and scrap'd off with some fit instrument of *Wood*, which may not excorticate the *Tree*, or with a piece of *Hair-cloth* after a sobbing *Rain*: But the most infallible Art of *Emuscation* is taking away the *cause*, which is superfluous *moisture* in *clayie*, and spewing grounds.

9. *Ivy* is destroy'd by digging up the *Roots*, and loosning its hold: And yet even *Ivy* it self (the destruction of many fair *Trees*) if very old, and where it has long invested its support, if taken off, does frequently kill the *Tree*, by a too suddain exposure to the unaccustom'd cold: Of the *Roots* of *Ivy* (which with small Industry, may be made a beautiful Standard) are made curiously polish'd, and fleck'd *cups*, and *boxes*, and even *Tables* of great value. *Mistletoe*, and other *Excrescences* to be cut, and broken off. But the *Fungi* (which prognosticate a fault in the *Liver*, and *Entrails* of *Trees* as we may call it) is remedied by *Abrasion*, *Friction*, *Interlucation* and exposure to the *Sun*.

10. The *Bodies* of *Trees* are visited with *Canker*, *Hollowness*, *Hornets*, *Earwigs*, *Snails*, &c.

11. The *Wind-shock* is a *bruise*, and *shiver* throughout the *Tree*, though not constantly visible, yet leading the *Warp* from smooth renting, caused by over-powerful *Winds*, when young, and perhaps, by subtil *Lightnings*: The best prevention is *shelter*, choice of place for the *Plantation*, frequent *shreading*, whilst they are yet in their youth.

12. *Cankers* (caused by some stroak, or galling, or by hot, and burning land) are to be cut out to the quick, the scars emplastr'd with *Tar* mingled with *Oyl*, and over that, a thin spreading of *loam*; or else with *clay*, and *Horse-dung*; but best, with *hogs-dung* alone, bound to it in a rag: or by laying *Wood-ashes*, *Nettles*, or *Fern* to the roots, &c. But if the *Gangreen* be within, it must be cured by *nitrous*, *sulphureous* and drying applications, and by no means, by any thing of an *unctuous* nature, which is exitial to *Trees*. *Tar*, as was said, only excepted, which I have experimentally known to preserve *Trees* from the envenom'd teeth of *Goats*, and other injuries; the intire stem smear'd over, without the least prejudice, to my no small admiration: But for over hot, and torrid land, you must sadden the mould about the root with *Pond-mud*, and *Neats-dung*; and by *Grafting* *Fruit-trees* on stocks rais'd in the same mould, as being more homogeneous.

13. *Hollowness*, is contracted, when by reason of the ignorant, or careless lopping of a *Tree*, the wet is suffer'd to fall perpendicularly upon a part, especially the *Head*: In this case, if there be sufficient sound wood, cut it to the quick, and close to the body, and cap the hollow part with a *Tarpaulin*, or fill it with good stiff  
loam,



*loam, Horse-dung* and fine *hay* mingled. This is one of the worst of *Evils*, and to which the *Elm* is most obnoxious. Old broken boughs if very great, are to be cut off at some distance from the body, but the smaller, close.

14. *Hornets*, and *Wasps*, &c. by breeding in the hollowness of *Trees*, infect them, and are therefore to be destroy'd by stopping up their entrances with *Tar*, and *Goof-dung*, or by conveying the *fumes* of *brimstone* into their *Cells*.

15. *Earwigs*, and *Snails* do seldom infect *Forest-trees*, but those which are *Fruit-bearers*, and are destroy'd by setting *Boards*, or *Tiles* against the *Walls*, or the placing of *neat hoofs*, or any hollow thing upon small *stakes*; also by enticing them into sweet waters, and by picking the *Snails* off betimes in the *Morning*, and rainy *Evenings*: I advise you to visit your *Cypress-Trees* on the first *Rains* in *April*; you shall sometimes find them cover'd with young *snails*, no bigger than small *pease*: Lastly, *Branches*, *Buds*, and *Leaves* extremely suffer from the *Blasts*, *Jaundies*, and *Caterpillars*, *Rooks*, &c. Note, that you should visit the *Boards*, *Tiles*, and *Hoofs*, which you set for the retreat of those *Insects*, &c. in the heat of the day, to shake them out, and kill them.

16. The *blasted* parts of *Trees* are to be cut away to the *quick*; and to prevent it, *smoak* them in suspicious weather, by burning moist *straw* with the *wind*, or rather the dry, and superfluous cuttings of *Aromatic* plants, such as *Rosemary*, *Lavender*, *Juniper*, *Bays*, &c. Use to whip, and chastise my *Cypresses* with a wand, after their *Winter-burnings*, till all the *mortified*, and *scorch'd* parts flie-off in *dust*, as long almost as any will fall, and observe that they recover and spring the better. *Mice*, *Moles*, and *Pismires* cause the *Jaundies* in *Trees*, known by the *discolour* of the *Leaves* and *Buds*.

17. The *Moles* do much hurt, by making hollow passages, which grow *mustie*; but they may be taken in *Traps*, and kill'd, as every *Woodman* knows: It is certain that they are driven from their haunts by *Garlick* for a time, and other heady smells, buried in their passages.

18. *Mice*, with *Traps*, or by sinking some *Vessel* almost level with the surface of the ground, the *Vessel* half full of *Water*, upon which let there be strew'd some *hulls*, or *chaff* of *Oats*; also with *Bane*.

19. Destroy *Pismires* with scalding water, and disturbing their *hills*, or rubbing the *stem* with *Cow-dung*, or a decoction of *Tithymale*, washing the infested parts; and this will insinuate, and chase them quite out of the *chinks* and *crevices*, without prejudice to the *Tree*, and is a good prevention of other *Infirmities*: also by laying *Soot*, *Saw-dust*, or refuse *Tobacco*, where they haunt.

20. *Caterpillars*, by cutting off their *webs* from the twigs before the end of *February*, and burning them; the sooner the better: If they be already *hatched*, wash them off with *Water*, in which some of the *Caterpillars* themselves, and *Garlick* have been bruised, or the *juyce* of *Rue*; or choak, and dry them with *smoak* of

*Galbannum*,

*Galbanum, Shoo-soals, Hair,* and some affirm that planting the *Pionia* near them, is a certain remedy; but there is no remedy so facile, as the burning them off with small wisps of dry straw, which in a moment rids you.

21. *Rooks*, do in time, by pinching off the buds, and tops of Trees for their Nests, cause many Trees and Groves to decay: their dung propagates Nettles and Weeds, and choaks young seedlings: They are to be shot, and their Nests demolish'd. The *Bullfinch* and *Tilmouse* also eat off, and spoil the Buds of Fruit-trees, prevented by Choppers, or caught in the Wyre-mouse-trap with teeth, and baited with a piece of rusty Bacon, also with Lime-twigs. But if Cattel break in before the time, *conclamatum est*, especially Goats, whose mouths, and breath is poison to Trees; they never thrive well after, and *Varro* affirms, if they but lick the Olive tree, they become immediately barren.

22. Another touch at the Winds; for though they cannot properly be said to be *Infirmities* of Trees; yet they are amongst the principal causes that render Trees infirm. I know no surer protection against them, than (as we said) to shelter, and stake them whilst they are young, till they have well establish'd Roots; And with this caution, that in case any goodly Trees (which you would desire especially to preserve and redress) chance to be prostrated by some impetuous, and extraordinary Storm, you be not over hasty to carry him away, or despair of him; but first let me persuade you, to poll him close, and so let him lie some time; for by this means, many vast Trees have rais'd themselves by the vigour only of the remaining Roots, without any other assistance; so as people have pronounc'd it *Miraculous*, as I could tell you by several Instances; besides what *Theophrastus* relates c. 19. of that huge *Platanus*, which rose in one Night in his observation; and the like I find hapn'd in more than one Tree, near *Bononia* in Italy, An. 1637, when of late, a turbulent Gust had almost quite eradicated a very large Tract of huge *Poplars*, belonging to the *Marchioness Elephanta Spada*, that universally erected themselves again, after they were beheaded, as they lay even prostrate: What says the Naturalist? *Prostratas restitui plerunque, & quadam terra cicatrice reviviscere, vulgare est*: 'Tis familiar (says *Pliny*) in the *Platanus*, which are very obnoxious to the Winds, by reason of the thickness of their branches, which being cut off, and discharged, restore themselves. This also frequently happens in *Wall-nuts, Olive-trees*, and several others, as he affirms; l. 16. c. 31. These (amongst many others) are the *Infirmities* to which Forest-trees are subject whilst they are standing; and when they are fell'd, to the Worm; especially if out before the Sap be perfectly at rest: But to prevent, or cure it in the Timber, I recommend this Secret as the most approv'd.

23. Let common yellow Sulphur be put into a cucurbit-glass, upon which, pour so much of the strongest *Aqua-fortis*, as may cover it three fingers deep: Distil this to dryness, which is done by two, or three Rectifications: Let the Sulphur remaining in the bottom (being of a blackish, or sad-red colour) be laid on a Marble,

ble, or put into a *Glass*, where it will easily dissolve into *Oil*: With this, anoint what is either infected, or to be preserved of *Timber*. It is a great, and excellent *Arcanum* for tinging the *Wood* with no unpleasant colour, by no Art to be washed out; and such a preservative of all manner of *Woods*, nay, of many other things; as *Ropes*, *Cables*, *Fishing-nets*, *Masts of Ships*, &c. that it defends them from *putrefaction*, either in *Waters*, under, or above the earth, in the *Snow*, *Ice*, *Air*, *Winter* or *Summer*, &c. It were superfluous to describe the process of the *Aqua-fortis*; It shall be sufficient to let you know, That our common *Copperas* makes this *Aqua-fortis* well enough for our purpose, being drawn over by a *Retort*: And for *Sulphur*, the *Island of St. Christophers* yields enough, (which hardly needs any *Refining*) to furnish the whole world. This *Secret* (for the *Curious*) I thought fit not to omit; though a more compendious, three or four *assettings* with *Linseed Oyl*, has prov'd very effectual: It was experimented in a *Walnut Table*, where it destroy'd millions of *Worms* immediately, and is to be practis'd for *Tables*, *Tubes*, *Mathematical-Instruments*, *Boxes*, *Bed-Heads*, *Chairs*, *Rarities*, &c. *Oyl of Walnut* will doubtless do the same, is sweeter, and a better *Vernish*; but above all, is commended *Oyl of Cedar*, or that of *Juniper*.

14. Hitherto I have spoken of *Trees*, their *kinds*, and *propagation* in particular: Now a word or two concerning their *ordering* in general, as it relates to *Copp'ces*, *Lopping*, *Felling*, &c. Then I shall add something more concerning their *Uses*, as to *Fuel*, &c. and cast such accidental *Lessons* into a few *Aphorisms*, as could not well be more regularly inserted.

Lastly, I shall conclude, with some more serious *Observations*, in reference to the main *Design*, and project of this *Discourse*, as it concerns the *Improvement* of his *Majesties Forests*, for the *honour*, and security of the whole *Kingdom*.

## C H A P. XXVIII.

### Of Copp'ces.

Copp'ces.

1. *Stiva Cadua* is (as *Varro* defines it) as well *Copp'ces* to cut for *Fuel* as for use of *Timber*; and we have already shew'd how it is to be rais'd, both by *Sowing* and *Planting*. I shall only here add, that if in their first *Designation*, they be so laid out, as to grow for several *Falls*; they will both prove more *profitable*, and more *delightful*: More *profitable*, because of their annual *succession*; and more *pleasant*, because there will always remain some of them *standing*; and if they be so cast out, as that you leave straight, and even *intervals* of eighteen, or twenty *feet* for *grass*, between *spring-wood* and *spring-wood*, securely *Fenc'd*, and preserv'd; the



the *Pastures* will lie both *warm*, and prove of exceeding *delight* to the *Owner*. These *Spaces* likewise useful, and necessary for *Cart-way*, to fetch out the *wood* at every *Fall*. There is not a more noble, and worthy *Husbandry*, than is this, which rejects no sort of *Ground*, as we have abundantly shew'd; since even the most *boggy* places, may so be *drein'd*, and cast, as to yield its increase, by *Planting* the *dryer* sorts upon the *Ridges* and *banks* which you cast up, where they will *thrive* exceedingly: And then *Willow*, *Sallow*, *Alder*, *Poplar*, *Sycamor*, *Black Cherry*, &c. will shoot tolerably well, on the lower, and more *Uliginous*; with this *caution*, that for the *first two years*, they be kept diligently *weeded* and *cleansed*, which is as necessary as *fencing*, and guarding from *Cattel*. Our ordinary *Copp'ces* are chiefly upon *Hasel*, or the *Birch*; but if amongst the other kinds store of *Ash*, *Cheffnut*, *Sallow*, and *Sycamor*, (at least *one in four*) were sprinkled in the *Planting*, the *profit* would soon discover a difference, and well recompence the *industry*. Others advise us to *Plant* shoots of *Sallow*, *Willow*, *Alder*, and of all the *swift-growing-Trees*, being of seven years *growth*, *sloping* off both the *ends* towards the *ground*, to the length of a *Billet*, and burying them a reasonable depth in the *earth*. This will cause them to put forth seven or eight *branches*, each of which will become a *Tree* in a short time, especially, if the *soil* be moist. The nearest *distance* for these *Plantations* ought never to be less than *five foot* at first, since every *felling* renders them wider for the benefit of the *Timber*, even to *thirty*, and *forty* foot in five, or six *fellings*.

2. Though it be almost impossible for us to prescribe at what *Age* it were best *Husbandry* to fell *Copp'ces* (as we at least call *best Husbandry*) that is, for most, and greatest gain; since the *Markets*, and the *kinds of Wood*, and emergent *uses* do so much govern; yet *Copp'ces* are sometimes of a competent stature after *eight*, or *nine* years from the *Acorn*, and so every *eight*, or *ten* years successively, will rise better and better: But this had need be in extraordinary ground, otherwise you may do well to allow them *twelve*, or *fifteen* to fit them for the *Ax*; but those of *twenty* years standing are better, and far advance the price; especially, if *Oak*, and *Ash*, and *Cheffnut* be the chief furniture. Some of our old *Clergy* spring-Woods heretofore have been let rest till twenty five, or thirty years, and have prov'd highly worth the attendance; for by that time, even a *Seminary* of *Acorns*, will render a considerable advance, as I have already exemplified in the *Northamptonshire Lady*. And if *Copp'ces* were so divided, as that every year there might be some *fell'd*, it were a continual, and a present Profit: Seventeen years growth affords a tolerable *Fell*; supposing the *Copp'ce* of seventeen *Acres*, one *Acre* might be yearly *fell'd* for ever; and so more, according to proportion; but though the seldom *Fall*, yields the more *Timber*, yet the frequent makes the *under-wood* the thicker; therefore at ten, or twelve years-growth (says Mr. *Cook*) in shallow ground, and fourteen in deeper: If many *Timber-Trees* grow in your *Copp'ces* which are to be cut down, fell both *them*, and the *under-*

wood as near the ground as may be; but this is to be understood where the wood is very thick; otherwise, 'tis advisable to stock up the thinner, especially in great Timber, and to set in the holes, *Elm, Cherry, Poplar, Sallow, Service*; and so these Trees which are apt to grow from the running-root thicken the Wood exceedingly; whilst the very Roots will pay for the grubbing, and yield you some feet of the best Timber; whereas being let stand, nothing would have grown: If the Ground be a shallow soil, forbear filling the holes quite, but set some running-wood in the loosened Earth, and the ends of the old roots being cut, will furnish the sides of the holes speedily: In thin Copp'ces 'tis profitable to lay some boughs a-thwart, which will be rooted to advantage against next fall: All great rotten-Stubs among your under-woods should be extirpated, as making way for seedlings, and young roots to spring and run: The cutting slanting, smooth, and close is of great importance; and frequent felling gives way, and air to the subnascent seedlings, and the rest will make lusty shoots.

3. As to what Numbers and Scantlings you are to leave on every Acre, the Statutes are our general guides, at least the legal. It is a very ordinary Copp'ce, which will not afford three or four Firsts, that is, Bests; fourteen Seconds, twelve Thirds, eight Wavers, &c. according to which proportions, the sizes of young Trees in Copp'cing, are to succeed one another. By the Statute of 35 Hen. 8. in Copp'ces, or Under-woods fell'd at twenty four years growth, there were to be, left twelve Standils, or Stores of Oak, upon each Acre; in defect of so many Oaks, the same number of Elms, Ash, Asp, or Beech; and they to be such, as are of likely Trees for Timber, and of such as have been spar'd at some former Felling, unless there were none, in which case, they are to be then left, and so to continue without Felling, till they are ten inch square within a yard of ground. Copp'ces above this growth fell'd, to leave twelve great Oaks; or in defect of them, other Timber-trees (as above) and so to be left for twenty years longer, and to be enclosed seven years.

4. In summ, you are to spare as many likely Trees for Timber, as with discretion you can. And as to the Felling (beginning at one side, that the Carts may enter without detriment to what you leave standing) the Under-wood may be cut from January, at the latest, till mid-March or April; or from mid-September, till near the end of November; so as all be avoided by Midsummer at the latest, and then fenced (where the Rows, and brush lye longer unbound or made up, you endanger the loss of a second-Spring) and not to stay so long as usually they are a clearing, that the young, and the Seedlings may suffer the least interruption: And if the Winter previous to your felling Copp'ces, you preserve them well from Cattel, it will recompense your care.

5. It is advis'd not to cut off the bronse-wood of Oaks in Copp'ces, but to suffer it to fall off, as where Trees stand very close, it usually does: I do not well comprehend why yet it should be spar'd so long.

6. When you espy a cluster of Plants growing as it were all in a bunch, it shall suffice that you preserve the fairest Sapling, cutting

ing all the rest away. And if it chance to be a *Chestnut*, *Service*, or like profitable *Tree*, clear it from the droppings, and incumbrances of other *Trees*, that it may thrive the better: Then, as you pass along, *prune* and *trim-up* all the young *Wavers*, covering such *Roots* as lie bare and expos'd, with fresh mould.

7. Cut not above *half a foot* from the *Ground*, nay the closer the better, and that to the *South*, slope-wise; *stripping* up such as you spare from their extravagant *branches*, *water-boughs*, &c. that hinder the growth of others: Always remembering (before you so much as enter upon this work) to preserve sufficient *Plash-pole* about the *verge* and bounds of the *Copp'ce* for fence, and security of what you leave; and for this, something less than a *Rod* may suffice: Then *raking* your *Wood* clear of *spray*, *chips*, and all incumbrances, that it up from the *Cartel*, the longer the better.

8. By the *statute*, Men were bound to enclose *Copp'ces* after *Felling*, of, or under fourteen years growth, for four years: Those above fourteen years growth, to be sixteen years *Enclos'd*; And for *Woods* in common, a fourth part to be shut up; and at *Felling*, the like proportion of great *Trees* to be left, and seven years *Enclos'd*: This was enlarg'd by 13 *Eliz.* Your elder *Under-woods* may be *graz'd* about *July*: But for a general *Rule*, newly-weaned *Calves* are the least noxious to newly-cut *Spring-woods*, where there is abundance of *Grass*; and some say, *Colts* of a year old; but then the *Calves* must be driven out at *May* at furthest, though the *Colts* be permitted to stay a while longer: But of this, every mans experience will direct him; and surely, the later you admit *Beasts* to graze, the better. For the *Measure* of *Fuel*, these proportions were to be observ'd.

9. Statutable *Billet* should hold *three foot* in length, and *seven inch* and *half compass*; *ten* or *fourteen* as they are counted for *one*, *two*, or *three*, &c. A *Stack* of *Wood* (which is the *boughs*, and *offal* of the *Trees* to be converted to *Char-coal*) is *four yards* long, *three foot* and *half* high (in some places but a *yard*) and as much over: In other places, the *Cord* is *four foot* in height, and *four foot* over; or (to speak more *Geometrically*) a *Solid* made up of three dimensions, *four foot* high, *four foot* broad, and *eight foot* long; the content *128 cubique feet*. *Fagots*, ought to be a full *yard* in length, and *two foot* in circumference, made round, and not flat; for so they contain less *Fuel*, though equal in the bulk appearing. But of these particulars, when we come to speak expressly of *Fuel*.

10. In the mean time, it were to be wish'd, that some approv'd *Experiments* were sedulously try'd (with the advice of skilful, and ingenious *Physicians*) for the making of *Beer* without *Hopps*; as possibly with the white *Marrubium* (a Plant of singular virtue) or with dry'd *Heath-tops* (*viz.* that sort which bears no berries) or the like, far more wholesome, and less bitter than either *Tamarisk*, *Carduus*, or *Broom*, which divers have essay'd; it might prove a means to save a world of *Fuel*, and in divers places young *Timber*, and *Copp'ce-wood*, which is yearly spent for *Poles*; especially, in Countries where *Wood* is very precious.

Note;



Note, that the *Wood-land-measure* by *Statute*, is computed after eighteen foot the *Perch*.

## C H A P. XXIX.

## Of Pruning.

*Pruning.*

1. **P**RUNING I call all purgation of *Trees* from what is superfluous. The *Ancients* found such benefit in *Pruning*, that they feigned a *Goddeſs* preſided over it, as *Arnobius* tells us: And in truth, it is in the diſcreet performance of this *work*, that the improvement of our *Timber*, and *Woods* does as much conſiſt as in any thing whatſoever. A ſkillful *Planter* ſhould therefore be early at this *Work*: Shall old *Gratius* give you *Reason* and *Direction*? And his *Interpreter* thus in *English*?

Twigs of themſelves never riſe ſtraight and high,  
And Under-woods are bow'd as ſoon as they ſhoot.  
Then prune the *Boughs*; and *Suckers* from the root  
Diſcharge. The *heavy wood* ſend pity thro'.  
After, when with tall rods the *Tree* aſpires,  
And the round ſtaves to Heaven advance their twigs,  
Pluck all the buds; and ſtrip off all the ſprigs;  
Theſe iſſues vent what moiſture ſtill abound,  
And the veins unemploy'd grow hard and ſound.

Nunquam ſponte ſua procerus ad atra terms  
Exiit, inque ipſa curvantur ſirpe geniſſe.  
Ergo age luxuriem primo ſectuſque nocentis  
Detrahe: frondolas gravat indulgentia ſilvas.  
Poſt ubi proceris genioſa ſtrepibus arbor  
Se dedit, truntesque ferent ad ſidera virge,  
Stringe, notas circum, & gemmantis exige verſus.  
His, ſi quis vitium nociturus ſufficit humor,  
Visceribus fluit, & venas durabit inertas.

Gra. ſal.  
Cynaget.

2. For 'tis a miſery to ſee how our faireſt *Trees* are defac'd, and mangl'd by unſkilful *Wood-men*, and miſchievous *Bordurers*, who go always arm'd with ſhort *Hand-bills*, hacking and chopping off all that comes in their way; by which our *Trees* are made full of *knots*, *boils*, *cankers*, and deform'd bunches, to their utter deſtruction: Good *Husbands* ſhould be aſham'd of it; though I would have no *Wood-man* pretend to be without all his neceſſary *Furniture*, when he goes about this *work*; which I (once for all) reckon to be the *Hand-bill*, *Hatchet*, *Hook*, *Hand-saw*, an excellent *Pruning-Kniſe*, broad *Chizel* and *Mallet*, all made of the beſt *ſteel* and kept ſharp; And thus he is provided for greater, or more gentle *Executions*, *Purgations*, *Reciſions*, and *Coercions*; and it is of main concern, that the proper, and effectual *Tool* be applied to every *work*; ſince heavy, and rude *Inſtruments* do but *mangle* and *bruife* tender *Plants*; and if they be too ſmall, they cannot make *clear*, and *even work* upon great *arms* and *branches*: The *Kniſe* is for *Twigs* and *Spray*; The *Chizel* for larger *Armes*, and ſuch *Amputations* as the *Ax* and *Bill* cannot well operate upon. As much to be reprehended are thoſe who either begin this *work* at unſeaſonable times, or ſo maim the poor *branches*, that either out of lazineſs, or want of ſkill, they leave moſt of them *ſtubs*, and inſtead of cutting the *Arms* and *Branches* cloſe to the *bole*, hack them

them off a foot or two from the body of the Tree, by which means they become *hollow* and *rotten*, and are as so many *Conduits* to receive the *Rain* and the *Weather*, which conveys the wet to the very *Matrix* and *Heart*, deforming the whole Tree with many ugly *botches*, which shorten its life, and utterly marres the *Timber*: I know Sir H. Platt tells us, the *Elm* should be so *lopp'd*, but he says it not of his own *Experience* as I do. And here it is that I am (once for all) to warn our disorderly *Husband-men* from coveting to let their *lops* grow to an extraordinary size, before they take them off, as conceiving it furnishes them with the more wood for the fire; not considering, how such gasty wounds mortally affect the whole Body of the Tree, or at least does so decay their vigour, that they hereby lose more in *one Year*, than the *lop* amounts to, should they pare them off sooner, and when the *scars* might be cover'd: 'Tis true (as the industrious Mr. Cook observes) some trees, as the *Horn-beam*, &c. will bear considerable *lops*, when there's only the *shell* of the Tree standing; but it is much to its detriment; especially to the *Ash*, which if once he come to take wet by this means, rarely produces more *lop* to any purpose; above all, if it decay in the middle, when 'tis fitter for the *Chimney*, than to stand and cumber the ground: The same may be pronounc'd of most Trees, which would not perhaps become *pollards* in many ages, but for this covetous barbarity, and unskilful handling.

3. By this *Animadversion* alone it were easie for an ingenious man to understand how Trees are to be govern'd; which is in a word, by sparing great *lops*, cutting *clean*, *smooth*, and *close*, making the stroke *upward*, and with a sharp *Bill*, so as the weight of an untractable *bough* do not *splice*, and carry the *bark* with it, which is both dangerous and unsightly. The *Oak* will suffer it self to be made a *pollard*, that is, to have its *Head* quite cut off; but the *Elm* so treated, will perish to the *foot*, and certainly become hollow at last, if it scape with *life*.

4. The proper Season for this work is for old Trees *earlier*, for young *later*, as a little after the change in *January* or *February*, some say in *December*, the *Wind* in a gentle quarter:

Then shave their locks, and cut their branchy tress  
Severel now, luxuriant boughs repress;

—Tunc stringe comas, tunc brachia rinde:  
—Tunc denique dura  
Exerce Imperia, & ramos compesce fluentis.

Georg. 2.

But this ought not to be too much in young *Fruit-trees*, after they once come to form a handsome *head*; in which period you should but only pare them over about *March*, to cover the *stock* the sooner, if the Tree be very choice: To the *aged*, this is plainly a renewing of their *Youth*, and an extraordinary refreshment, if taken in *time*, and that their *Arms* be not suffer'd to grow too great and large; in which case, the member must not be *amputated* too near the body, but at some distance — *ne pars sincera trahatur*: and remember to cut smooth, and sloping upwards if upright boughs, otherwise downward; and be sure to *emplaster* great wounds to keep out the wet, and hasten the covering of the bark: Besides,  
for

for *Interlucation*, exuberant branches, & *spisse nemorum comæ*, where the *boughs* grow too thick and are cumbersome, to let in the *Sun* and *Air*, this is of great importance; and so is the sedulous taking away of *Suckers*, *Water-boughs*, *Fretters*, &c. And for the benefit of tall *Timber*, the due *stripping up* the branches, and *rubbing off* the *buds* to the heights you require: Yet some do totally forbear the *Oak*, especially if aged; observing that they much exceed in growth such as are pruned; and in truth such *Trees* as we would leave for *shade*, and ornament, should be seldom cut; but the *browse-wood* cherish'd and preserv'd as low towards the Ground as may be, for a more venerable and solemn *shade*: and therefore I did much prefer the *Walk* of *Elms* at *St. James's Park*, as it lately grew *branchy*, intermingling their reverend tresses, before the present trimming them up so high; especially, since I fear, the *remedy* comes too late to save their decay, if the amputations of such overgrown parts as have been cut off, should not rather accelerate it, by exposing their large, and many *wounds* to the injuries of the weather, which will indanger the *rotting* of them, beyond all that can be apply'd by *Tar*, or otherwise to protect them: I do rather conceive their *Infirmities* to proceed from what has not long since been abated of their large spreading Branches, to accommodate with the *Mall*; as any one may conjecture by the great impression which the *wet* has already made in those incurable scars, that being now multiplied, must needs the sooner impair them; The *roots* having likewise infinitely suffer'd, by many disturbances about them. In all events this *Walk* might have enjoy'd its goodly *Canopy* with all their *branchy* furniture for some *Ages* to come; since 'tis hardly *one*, that first they were planted: But his *Majesty* will have providently, and nobly supplied this *defect*, by their successors of *Lime-trees*, which will sooner accomplish their perfection.

One should be cautious in heading *Timber-trees*, especially the *pythy*; unless where they grow very crooked, in which case abate the *head* with an upward sloop, and cherish a leading shoot: The *Beech* is very tender of its head.

It is by the discreet leaving the *side-boughs* in convenient places, sparing the smaller, and taking away the bigger, that you may advance a *Tree* to what determin'd height you desire: Thus, bring up the *leader*, and when you would have that spread and break out, cut off all the *side-boughs*, and especially at *Midsummer*, if you espie them breaking out. Young trees may every year be pruned, and as they grow older at longer intervals, as at three, five, seven or sooner, that the *wounds* may recover, and nothing be deformed.

*Ever-Greens* do not well support to be *decapitated*; *side-boughs* they freely spare in *April*, and during the *Spring*; and if you cut at first *two* or *three Inches* from the body, and the next *Spring* after, close to the *stem*, covering it with *Wax*, or well temper'd *clay*, the most tender may suffer such amputations without prejudice.

5. Divers other precepts of this nature I could here enumerate, had not the great *experience*, faithful, and accurate *description* how  
this



this necessary *work* is to be perform'd, set down by our Country-man honest *Lawson* (*Orchard, cap. 11.*) prevented all that the most *Inquisitive* can suggest: The particulars are so ingenious, and highly material, that you will not be displeas'd to read them in his own style, and *Character*.

All ages (saith he) by Rules and experience do consent to a pruning, and lopping of Trees: Yet have not any that I know described unto us (except in dark, and general words) what, or which are those superfluous boughs, which we must take away; and that is the most chief, and most needful point to be known in lopping. And we may well assure our selves (as in all other Arts, so in this) there is a vantage and dexterity by skill; an habit by practice out of experience, in the performance hereof, for the profit of mankind: Yet do I not know (let me speak it with patience of our cunning Arborists) any thing within the compass of humane affairs so necessary, and so little regarded; not only in Orchards, but also in all other Timber-trees, where or whatsoever.

Now to our purpose:

How many Forests, and Woods, wherein you shall have for one lively thriving Tree, four (nay sometimes twenty four) evil thriving, rotten and dying Trees, even whiles they live; and instead of Trees, thousands of bushes and shrubs! what rottenness! what hollownesse! what dead arms! wither'd tops! curtail'd trunks! what loads of Moss! drooping boughs! and dying branches shall you see every where! and those that in this sort are in a manner all unprofitable boughs, canker'd armes, crooked, little and short boals. What an infinite number of Bushes, Shrubs, and Skrags of Hasels, Thorns, and other unprofitable wood, which might be brought by dressing to become great, and goodly Trees! Consider now the Cause.

The lesser Wood hath been spoil'd with careless, unskillful, and untimely felling; and much also of the great Wood. The greater Trees at the first rising have fill'd and overladen themselves with a number of wasteful boughs and suckers, which have not only drawn the sap from the boal, but also have made it knotty, and themselves, and the boal mossie, for want of dressing; whereas, if in the prime of growth, they had been taken away close, all but one top, and clean by the bulk, the strength of all the sap should have gone to the bulk, and so he would have recovered, and cover'd his knots, and have put forth a fair, long, and straight body, for Timber profitable, huge great of bulk, and of infinite last.

If all Timber-trees were such (will some say) how should we have crooked wood for Wheels, Coorbs, &c?

Ans. Dress all you can, and there will be enough crooked for those uses.

More than this, in most places they grow so thick, that neither

themselves, nor earth, nor any thing under or near them can thrive; nor Sun, nor Rain, nor Air can do them, nor any thing near, or under them, any profit or comfort.

I see a number of Hags, where out of one root you shall see three or four (nay more, such is mens unskilful greediness, who desiring many, have none good) pretty Oaks, or Ashes straight and tall; because the root at the first shoot gives sap again: But if one only of them might be suffer'd to grow, and that well, and cleanly prun'd, all to his very top, what a Tree should we have in time? And we see by those roots continually, and plentifully springing, notwithstanding so deadly wounded, what a Commodity should arise to the Owner, and the Commonwealth if wood were cherished, and orderly dress'd. The waste boughs closely, and skilfully taken away, would give us store of Fences and Fuel; and the bulk of the Tree in time would grow of huge length and bigness: But here (methinks) I hear an unskilful Arborist say, that Trees have their several forms, even by Nature; the Pear, the Holly, the Aspe, &c. grow long in hulk, with few and little Arms. The Oak by nature broad, and such like. All this I grant: But grant me also, that there is a profitable end and use of every Tree, from which if it decline (though by nature) yet Man by Art may (nay must) correct it. Now other end of Trees I never could learn, than good Timber, Fruit much and good, and pleasure: *Niles* Physical hinder nothing a good form.

Neither let any Man ever so much as think, that it is unprofitable, much less impossible, to reform any Tree of what kind soever: For (believe me) I have tried it: I can bring any Tree (beginning betime) to any form. The Pear, and Holly may be made spread, and the Oak to close.

Thus far the good *Man* out of his eight and forty years experience concerning *Timber-trees*: He descends then to the *Orchards*; which because it may likewise be acceptable to our industrious *Planter*, I thus contract.

6. Such as stand for *Fruits* should be parted from within two foot (or thereabouts) of the earth; so high, as to give liberty to dress the *Root*, and no higher; because of exhausting the *sap* that should feed his *Fruit*: For the *boal* will be first, and best served and fed, being next to the *root*, and of greatest substance. These should be parted into two, three, or four *Arms*, as your *graffs* yield twigs; and every *Arm* into two, or more *Branches*, every *Branch* into his several *Cyons*: still spreading by equal degrees; so as his lowest spray be hardly without the reach of a mans hand; and his highest not past two yards higher: That no *twig* (especially in the midst) touch his fellow; let him spread as far as his list without any master-bough, or top, equally; and when any fall lower than his fellows (as they will with weight of *Fruit*) ease him the next spring of his superfluous *twigs*, and he will rise: When any mount above the rest, top him with a nip between your fingers, or with a knife:

Thus

Thus reform any *Cyon*; and, as your Tree grows in *stature*, and *strength*, so let him rise with his tops, but *slowly*, and easily; especially in the middest, and equally in breadth also; following him upward, with lopping his under-growth, and *water-boughs*, keeping the same distance of *two yards*, not above *three*, in any wise, betwixt the lowest and highest twigs.

1. Thus shall you have handsome, clear, healthful, great and lasting *Trees*.

2. Thus will they grow safe from *Winds*, yet the top spreading.

3. Thus shall they bear much *Fruit*; I dare say, one as much as five of your common *Trees*, all his branches loaden.

4. Thus shall your *Boat* being low, defraud the branches but little of their *sap*.

5. Thus shall your *Trees* be easie to *dress*, and as easie to gather the *Fruit* from, without bruising the *Cyons*, &c.

6. The fittest time of the *Moon* for the *Pruning* is (as of *Grafting*) when the *sap* is ready to stir (not proudly stirring) and so to cover the *wound*; and here, for the time of *day*, we may take *Columella*, *Prudentem medio die arborator ne coedito*, l. II. Old *Trees* would be pruned before young *Plants*: And note, that wheresoever you take any thing away, the *sap* the next *Summer* will be putting; be sure therefore when he puts to bud in any unfit place, you rub it off with your finger; and if this be done for three, or four years still at *Midsummer*, it will at last wholly clear the side-boughs, and exalt the growth of the *stem* exceedingly; and this is of good use for *Stems*, and such *Trees* as are continually putting forth where they have been pruned: Thus begin *timely* with your *Trees*, and you may bring them to what *form* you please. If you desire any *Tree* should be taller, let him *break*, or divide higher: This, for young *Trees*. The old are reformed by curing of their *diseases*, of which we have already discours'd. There is this only to be consider'd, in reference to *Foresters*, out of what he has spoken concerning *Fruit-trees*, that (as has been touch'd) where *Trees* are planted for shadow, and meet ornament, as in *Walks*, and *Avenues*, the *Browse-ward* (as they call it) should most of it be cherished; whereas in *Fruit*, and *Timber-trees* (*Oak* excepted) it is best to free them of it. As for *Pollards* (to which I am no great friend, because it makes so many *snags* and *dwarfs* of many *Trees* which would else be good *Timber*, endangering them with *drips* and the like *injuries*) they should not be beaded above once in ten or twelve years, at the beginning of the *Spring*, or end of the *Fall*. And note, that all *coppicing*, and *cutting close*, invigorates the *Roots* and the *stem* of whatsoever grows *weak* and unkindly; but you must then take care it be not overgrown with *Weeds* or *Grass*: Nothing (says my Lord Bacon *Exp.* 486. and truly) causes *Trees* to last so long, as the frequent *Cutting*; every such *diminution* being a re-invigoration of the *Plants* *Juice*; so that it neither goes too far, nor rises too faintly, as when 'tis not timely refresh'd with this *Remedy*; and therefore we see, that the most ancient *Trees* in *Church-Yards*, and



about *Old Buildings*, are either *Pollards* or *Dottards*, seldom arising to their full altitude.

7. For the improvement of the speedy growth of *Trees*, there is not a more excellent thing than the frequent rubbing of the *Bark* or *Stem*, with some piece of *hair-cloth*, or ruder stuff, at the beginning of *Spring*: some I have known done with *Seals-skin*; the more rugged bark with a piece of *Coat of Mail*, which is made of small *wyers*; This done, when the body of the *Trees* are wet, as after a soaking *Rain*; yet so, as not to excoorticate, or gall the *Tree*, has exceedingly accelerated its growth, (I am assured, to a wonderful and incredible improvement) by opening the *pores*, freeing them of *moss*, and killing the *worm*.

8. Lastly, *Fronddation*, or the taking off some of the luxuriant *branches*, and *sprays*, of such *Trees*, especially whose leaves are profitable for *Cattel* (whereof already) is a kind of *pruning*: and so is the *scarifying*, and *cross-batching* of some *Fruit-bearers*, and others, to abate that *superfluity* which spends all the *juice* in the *leaves*, to the prejudice of the rest of the parts.

9. This, and the like, belonging to the care of the *Wood-ward*, will mind him of his continual duty; which is to walk about, and survey his young *Plantations* daily; and to see that all *Gaps* be immediately stopp'd; trespassing *Cattle* impounded; and (where they are infested) the *Deer* chased out, &c. It is most certain, that *Trees* preserv'd, and govern'd by this discipline, and according to the *Rules* mention'd, would increase the beauty of *Forests*, and value of *Timber*, more in ten, or twelve years, than all other imaginable *Plantations* (accompanied with our usual neglect) can do in forty or fifty.

10. To conclude, in the time of this *Work* would our ingenious *Arborator* frequently incorporate, mingle, and unite the *Arms* and *Branches* of some young, and flexible *Trees* which grow in *confort*, and near to one another; by entring them into their mutual *barks* with a convenient *injection*: This, especially, about *Fields*, and *Hedge-rows* for *Fence* and *Ornament*: Dr. *Plot* mentions some that do *naturally*, or rather indeed *accidentally* mingle thus; especially the two *Beeches* in the way from *Oxford* to *Reading* at *Gain-end*; the bodies of which *Trees* springing from different *roots*, after they have ascended parallel to the *Top*, strangely unite together a great height from the ground, a transverse piece of timber entring at each end the bodies of the *Trees*, and growing jointly with them: The same is seen in *Sycowares* at *New-College Gardens*: I my self have woven young *Asp-poles* into twigs of three, and four braids like *Womens* hair when they make it up to *fillet* it under their *Cosifs*, which have strangely incorporated and grown together without separation.

*Trees* will likewise grow frequently out of the *bark* of the other, and some roots will penetrate through the whole length of the *Trunk*, till fastning in the very *Earth*, they burst the including *Tree*, as it has happened in *Willows*, where an *Asp-tree* has sprung likely from some *key* or *seed* dropt upon the rotten head of it: But this

this accident not so properly pertaining to this *Chapter*, I conclude with recommending the bowing and bending of young *Timber-Trees*, especially *Oak* and *Ash*, into various *flexures*, *curbs* and *postures*, oblig'd to ply themselves into different *Modes*, which may be done by humbling, and binding them down with tough *bands* and *withs*, or *hooks*; rather, cut *skew-wise*, or slightly *hagled* and indented with a *knife*, and so *skrewed* into the ground, or hanging of weighty stones to the tops, or branches, till the *tenor* of the *sap*, and custom of being so constrain'd, did render them apt to grow so of themselves, without power of redressing; This course would wonderfully accommodate Materials for *Knee-timber* and *Shipping*, the *Wheel-wright* and other uses; conform it to their *shoulds*, and save infinite labour, and abbreviate the work of *bowing* and *waste*,

*adeo in teneris consuescere multum est.*

and the *Poet*, it seems, knew it well, and for what purposes,

When in the woods with mighty force they bow  
The Elm, and shape it to a crooked plow.

*Centum in Sylvis magna vi flexa domatur  
In burim, et curvi formam accipit Ulmus aratri:*  
Geo. 1.

so as it even half made it to their hands.

## CHAP. XXX.

### Of the Age, Stature, and Felling of Trees.

**I**T is not till a *Tree* is arriv'd to his perfect *Age*, and full vigor, *Felling* that the *Lord* of the *Forest* should consult, or determine concerning a *Felling*. For there is certainly in *Trees* (as in all things else) a time of *Increment*, or growth; a *Status* or season when they are at *best* (which is also that of *Felling*) and a *decrement* or period when they decay. To the *first* of these they proceed with more, or less *velocity*, as they consist of more strict and compacted *particles*, or are of a slighter, and more lax'd *contexture*; by which they receive a speedier, or slower *defluxion* of *Aliment*: This is apparent in *Box*, and *Willow*; the one of a harder, the other of a more tender *substance*: But as they proceed, so they likewise continue. By the *state* of *Trees* I would signify their utmost *effort*, growth, and maturity, which are all of them different as to *time*, and *kind*; yet do not I intend by this any *period* or instant in which they do not continually either Improve or Decay (the end of one being still the beginning of the other) but farther than which, their *Natures* do not extend; but immediately (though to our senses imperceptibly) through some *infirmity* (to which all things sublunary

sublunary be obnoxious) dwindle and impair, either through *Age*, defect of *Nourishment*, by *sickness*, and decay of principal parts; but especially, and more inevitably, when violently invaded by mortal and incurable *Infirmities*, or by what other extinction of their *vegetative heat*, *subtraction*, or *obstruction* of *Air* and *Moisture*, which making all *motions* whatsoever to cease and determine, is the cause of their final destruction.

2. Our honest *Country-man*, to whose *Experience* we have been obliged for something I have lately *Animadverted* concerning the *Pruning* of *Trees*, does in another *Chapter* of the same *Treatise*, speak of the *Age* of *Trees*. The *Discourse* is both learned, rational, and full of encouragement: For he does not scruple to affirm, that even some *Fruit-Trees* may possibly arrive to a *thousand* years of *Age*; and if so *Fruit-Trees*, whose continual bearing does so much impair, and shorten their lives, as we see it does their form and beauty; How much longer might we reasonably imagine some *hardy* and slow-growing *Forest-trees* may probably last; I remember *Pliny* tells us of some *Oaks* growing in his time in the \* *Hercynian Forest*, which were thought *co-evals* with the *World* it self; their roots had even raised *Mountains*, and where they encounter'd, swell'd into goodly *Arches* like the *Gates* of a *City*: But our more modern *Author's* calculation for *Fruit-trees* (I suppose he means *Pears*, *Apples*, &c.) his allowance is *three hundred* years for *growth*, as much for their *stand* (as he terms it,) and *three hundred* for their *Decay*, which does in the total amount to no less than *nine hundred* years. This conjecture is deduc'd from *Apple-Trees* growing in his *Orchard*, which having known for *forty* years, and upon diligent enquiry of sundry aged Persons of eighty years and more, who remembred them *Trees* all their time, he finds by comparing their growth with others of that *kind*, to be far short in bigness and perfection, (*viz.* by more than two parts of three) yea albeit those other *Trees* have been much hindered in their stature, through ill government and misordering: And *thus* to ourselves not as all extravagant, since I find mention of a *tree* near *Ross* in *Hertsfordshire*, which being of no less than *18* feet in circumference, and yielding seven *Hogs-heads* of *Cider* yearly, must needs have been of very long standing and age, though perhaps not so near *Metropolis*.

3. To establish this, he assembles many *Arguments* from the age of *Animals*, whose *state* and *decay* double the time of their increase by the same proportion: *If then* (saith he) *those frail Creatures*, whose *habits* are *nothing* (in *humanity*) but a *tender* *delicateness*, may live to that age; I see not but a *Tree* of a *solid substance*, not diminished by heat or cold, capable of, and subject to any kind of ordering or dressing, feeding naturally, and from the beginning disburthen'd of all *superstitions*, eased of, and of his own accord avoiding the causes that may annoy him, should double the life of other *Creatures* by very many years. He proceeds, *What else are Trees in comparison with the Earth, but as hairs to the body of Man?* And it is certain, that (without some distemper,

\* *Hercynia*  
*Sylvæ roborem*  
*vastitas intacta*  
*totâ, & con-*  
*genita mundo,*  
*prope immortalis*  
*sorte miracula*  
*excedit. Plin.*  
 l. 16. c. 2.



distemper, or forcible cause) the hairs dure with the body, and are esteem'd excrements but from their superfluous growth: So as he resolves upon good Reason, that Fruit-trees well ordered, may live a thousand years, and bear Fruit; and the longer the more, the greater, and the better (for which an Instance also in Dr. Beal's Herefordshire Orchards, pag. 21, 22.) because his vigour is proud and stronger, when his years are many. Thus shall you see old Trees put forth their Buds and Blossoms both sooner, and more plentifully than young Trees by much; And I sensibly perceive (saith he) my young Trees to enlarge their Fruit as they grow greater, &c. And if Fruit-Trees continue to this Age, how many Ages is it to be supposed strong, and huge Timber-trees will last? whose massie bodies require the years of divers Methusela's before they determine their days; whose Sap is strong and bitter; whose Bark is hard and thick, and their substance solid and stiff; all which are defences of health and long life. Their strength withstands all forceable Winds; their Sap of that quality is not subject to Worms and tainting; their Bark receives seldom or never by casualty any wound; and not only so, but he is free from Removals, which are the death of millions of Trees; whereas the Fruit-tree (in comparison) is little, and frequently blown down; his Sap sweet, easily and soon tainted; his Bark tender, and soon wounded; and himself used by Man, as Man uses himself; that is, either unskillfully, or carelessly. Thus he. But Vossius de Theolog. Gent. l. 5. c. 5. gives too little age to Ashes, when he speaks but of one hundred years (in which, as in the rest, he seems to agree with my Lord Bacon, Hist. Vita & Mort. Artic. 1.) and to the Medica, Pyrus, Prunus, Cornus but sixty; he had as good have held his peace: Even Rosemary has lasted amongst us a hundred years.

4. I might to this add much more, and truly with sufficient probability, that the Age of Timber-trees, especially of such as be of a compact, resinous, or balsamical nature (for of this kind are the Tem, Box, Horn-beam, White-thorn, Oak, Walnut, Cedar, Juniper, &c.) are capable of very long duration and continuance: Those of largest Roots (a sign of Age) longer liv'd than the shorter; the dry than the wet; and the gummy, than the watery, sterile, than the fruitful: For not to conclude from Pliny's \* Hercynian Oaks, or the Turpentine Tree of Idumaea, (which Josephus ranks also with the Creation :) I mention'd a Cypress yet remaining somewhere in Persia near an old Sepulchre, whose stem is as large as five men can encompass, the boughs extending fifteen paces every way; this must needs be a very old Tree, believ'd by my Author little less than 2500 years of age: The particulars were too long to recount. The old Platanus set by Agamemnon, mention'd by Theophrastus, and the Herculean Oaks; the Laurel near Hippocren, the Vatican Ilex, the Vine which was grown to that bulk and Woodiness, as to make Columns in Juno's Temple, and such another in Margian is spoken of by Strabo, that was twelve foot in circumference: Pliny mentions one of six hundred years old in his time; and

\* Syladrum; Hercynia dirum sexaginta iter occupans, ut major aliis, ita & notior. Pomp. Meta. l. 3. c. 3.

and at Edoan the late Duke of Montmorancys house, is a Table of a very large dimension made of the like plant. And the old Lotus Trees, recorded by *Valerius Maximus*, and the *Quercus Mariana* celebrated by that Prince of Orators: *Plinies* huge *Larix*, and what grew in the *Fortunate Islands*, with that enormous Tree *Scaliger* reports was growing in the *Troglodytic India*, &c. were famous for their age: St. *Hierom* affirms he saw the *Sycomor* that *Zaccheus* climb'd up, to behold our LORD ride in Triumph to Jerusalem: And now in the *Aventine Mount* they shew us the *Malus Medica*, planted by the hand of St. *Dominic*: In *Congo* they speak of Trees capable to be excavated into Vessels that would contain two hundred men a piece. To which add those superannuated *Tilia's* now at *Basil*, and that of *Auspurg*, under whose prodigious shade they so often feast, and celebrate their Weddings; because they are all of them noted for their reverend Antiquity; for to such Trees it seems they paid Divine honours, as the nearest Emblems of Eternity, Et tanquam sacros ex vetustate, as *Quintilian* speaks: And like to these might that *Cypress* be, which is celebrated by *Virgil* near to another Monument.

5. But we will spare our Reader, and refer him that has a desire to multiply examples of this kind, to those undoubted Records our *Naturalist* mentions in his 44. Chap. Lib. 16. where he shall read of *Scipio Africanus's* Olive Trees; *Diana's Lotus*; the *Ruminal Fig-tree* lasting (as *Tacitus* calculated) 840 years: The *Ilex*, of prodigious antiquity, as the *Hetruscan* Inscription remaining on it imported; But *Pansanius* in his *Arcudics*, thinks the *Samian Virex* (of which already) to be one of the oldest Trees growing, and the *Platan* set by *Menelaus*; to these he adds the *Delian Palm*, co-evous with *Apollo* himself; and the *Olive* planted by *Minerva* according to their tradition; the over-grown *Myrtil*; the *Vatican Holm*, those of *Tyburine*, and especially, that near to *Tusculum*, whose body was thirty five foot about; besides divers others which he there enumerates in a large Chapter: And what shall we conjecture of the age of *Xerxes's* huge *Platanus*, in admiration whereof he staid the march of so many hundred thousand men for so many days, by which the wise *Socrates* was us'd to swear? And certainly, a goodly Tree was a powerful attractive, when that prudent *Consul, Passienus Crispus* fell in love with a prodigious *Beech* of a wonderful age and stature, and that wise Prince *Francis* the first, with an huge *Oak*, which he caus'd to be so curiously immur'd at *Bituriges*.

6. We have already made mention of *Tiberius's Larch*, employ'd about the *Navmachie*, which being of one hundred and twenty foot in length, bare two foot diameter all that space, not counting the top: To this might be added the *Mast* of *Demetrius's Galeasse*, which consisted but of one *Cedar*. And that of the *Float* which wash'd *Caligulas Obelisks* out of *Egypt*, four fathoms in circumference. We read also of a *Cedar* growing in the *Island* of *Cyprus*, which was 130 foot long, and 18 in diameter; of the *Plane* in *Athens*, whose roots extended 36 Cubits farther than the boughs, which

which were yet exceedingly large; and such another was that most famous Tree at *Veliternus*, whose arms stretch'd out 80 foot from the stem: But these were *solid*: Now if we will calculate from the *hollow*, besides those mention'd by *Pliny*, in the *Hercynian* Forest; the *Germans* (as now the *Indians*) had of old some *Pun- ti*, or *Canoes* of excavated *Oak*, which would well contain thirty, some forty persons: And the *Lician Platanus* recorded by the *Naturalist*, and remaining long after his days, had a room in it of eighty one feet in compass, adorn'd with *Fountains*, stately *Seats*, and *Tables* of stone; for it seems it was so glorious a Tree both in body, and head, that *Licinius Mutianus* (three times *Consul*, and Governour of that *Province*) us'd to feast his whole Retinue in it, chusing rather to lodge in it, than in his golden-roofed *Palace*; And of later date, that vast *Cerrus* in which an *Eremite* built his *Cell* and *Chappel*, so celebrated by the noble *Fracastorius* in his Poem *Malteide. Cant. 8. Stro. 30.*

But for these capacious *hollow-trees* we need go no farther than our own *Country*; there being (besides that which I mention in *Gloucester-shire*) an *Oak* at *Kidlington-green* in *Oxford-shire*, which has been frequently us'd (before the death of the late Judge *Morton*, near whose house it stood) for the immediate imprisonment of *Vagabonds* and *Malefactors*, till they could conveniently be remov'd to the County *Gaol*; And such another *Prison* Dr. *Plot* does in his excellent History of *Oxford-shire*, mention out of *Ferdinand Hertado* in *Moravia*, to be made out of the *Trunk* of a *Willow*, 27 foot in compass: But not to go out of our promis'd bounds, the learned *Doctor* speaks of an *Elm* growing on *Blechington-green*, which gave reception and harbour to a poor *great-bell'd Woman*, (whom the inhospitable people would not receive into their houses) who was brought to bed in it of a *Son*, now a lusty young fellow: These, with our *Historian*, I rather mention also for their extravagant use, and to refresh the *Reader* with some variety, than for their extraordinary capacity; because such instances are innumerable, should we pretend to illustrate this particular with more than needs.

And now I have spoken of *Elms* and other extravagancies of *Trees*; There stands one (as this curious Observer notes) in *Binsley* Common, six yards diameter next the ground, which 'tis conjectur'd has been so improv'd by raising an earthen bank, or seat about it, which has caus'd it to put forth into *spurs*; it not being so considerable in the higher *Trunk*.

7. Compare me then with these, that nine fathom'd-deep Tree spoken of by *Josephus à Costa*; the *Mastick-tree* seen, and measur'd by Sir *Francis Drake*, which was four and thirty yards in circuit; Those of *Nicaragua* and *Gambra*, which 17. persons could hardly embrace. In *India*, (says *Pliny*) *Arbores tantæ proceritatis traduntur, ut sagittis superari nequeant* (and adds, which I think material, and therefore add also) *Hæc facit ubertas soli, temperies cæli, & Aquarum abundantia*. Such were those Trees in *Corfica*, and near *Memphis*, &c. recorded by *Theophrastus*, &c. and for prodigious height, the two, and three hundred foot unparallel'd



*Palms-royal* describ'd by Captain Ligon, growing in our Plantations of the *Barbadoes*; or those goodly *Masts* of *Fir*, which I have seen, and measur'd, brought from *New-England*; and what *Bambus* relates of those twenty-fathom'd *Antarctic-Trees*; or those of which *Cardan* writes, call'd *Ciba*, which rising in their several *Stems* each of twenty foot in compass, and as far distant each from other, unite in the *bole* at fifteen foot height from the ground, composing three stately *Arches*, and thence ascending in a *shaft* of prodigious bulk and altitude; Such *Trees* of 37 foot diameter (an incredible thing) *Scaliger* (his Antagonist) speaks of *ad Gambra fluvium*. *Mattbiolus* mentions a *Tree* growing in the *Island* of *Cyprus*, which contain'd 130 foot high sound *Timber*: And upon *Mount Aetna* in *Sicily* is a place call'd by them *gli Castagne* from three *Chestnut-trees* there standing, where in the cavity of one yet remaining, a considerable *Flock* of *Sheep* is commonly fold'd: *Kerchers* words are these, as seen by himself, *Et quod forsam &c. δεξοι videri possit, ostendit mihi via dux, unius Castaneae Corticem tanta amplitudinis, ut intra eam integer pecorum grex à pastoribus, tanquam in Caula commodissima, motu includeretur. China Illust. p. 185.* But this, as I remember, was lately ruin'd by the direful conflagration about *Catanea*: And what may we conceive of those *Trees* in the *Indies*, one of whose *Nuts* hardly one man is able to carry; and which are so vast, as they depend not like other *Fruit*, by a *Stalk* from the boughs, but are produc'd out of the very body, and *stem* of the *Tree*, and are sufficient to feed twenty persons at a meal? There were *Trees* found in *Brazeele*, that sixteen Men could hardly fathom about, and the *Jesuits* caused one of these to be sell'd, for being superstitiously worship'd by the *Savages*, which was 120 foot in circumference. The *Mexican* Emperour is said to have had a *Tree* in his *Garden*, under whose shade a thousand men might sit at a competent distance.

We read of a certain *Fig* in the *Caribby Islands*, which emits such large buttresses, that great *Planks* for *Tables* and *Flooring* are cleft out of them, without the least prejudice to the *Tree*; and that one of these does easily shelter 200 men under them: *Strabo*, I remember, *Geog. l. 15.* talks of fifty *Horsemen* under a *Tree* in *India*; his words are *ὡς δὲ ἐν δένδρῳ περὶ ἑξῆς οὐαζοῦλῳς ἑκατὸν πεντήκοντα*, and of another that shaded five *stadia* at once; and in another place of a *Pine* about *Ida*, which measur'd 24 foot diameter, and of a monstrous height: To these may be added the *Arbor de Rays*, a certain *Tree* growing in the *East-Indies*, which propagates it self into a vast *Forest* (if not hinder'd) by shooting up, and then letting a kind of gummy string to fall and drivel from its branches, which takes root in the ground again, and in this process spread a vast circuit; the single stem of some of which are reported to be no less than fifty foot diameter, a thing almost incredible: But even this and all we have hitherto produc'd, is nothing to what I find mention'd in the late *Chinese History* (as 'tis set forth upon occasion of the *Dutch Embassy*) where they tell us of a certain *Tree* call'd *Ciennich* (or the *Tree* of a thousand years) in the Province

Province of *Suchu* near the City *Kiew*, which is so prodigiously large, as to shrowd 200 *Sheep* under one only *branch* of it, without being so much as perceiv'd by those who approach it. And to conclude with yet a greater wonder, of another in the Province of *Chekian*, whose amplitude is so stupendiously vast, as *four score* persons can hardly embrace: not to omit the strange, and incredible bulk of some *Oaks*, standing lately in *Westphalia*, whereof one serv'd both for a *Castle* and *Fort*, and another there which contain'd in height 130 *foot*, and (as some report) 30 *foot* diameter: I have read of a *Table* of *Walnut-tree* to be seen at *St. Nicholas's* in *Lorrain*, which held 25 *foot* broad, all of a *piece*, and of competent length and thickness, rarely *fleck'd* and *watered*; *Scamozzi* the *Architect* reports he saw it: Such a monster, that might be, under which the *Emperour Fred.* the *third* held his magnificent *Feast* 1472. For in this *recension* we will endeavour to give a taste of more fresh observations, and to compare our modern *Timber* with the *Antient*, and that, not only abroad, but without travelling into foreign Countries for these wonders.

8. What godly *Trees* were of old *ador'd*, and consecrated by the *Dryads* I leave to conjecture from the stories of our ancient *Britains*, who had they left *Records* of their *prodigies* in this kind, would doubtless have furnish'd us with *examples* as remarkable for the *growth* and *stature* of *Trees*, as any which we have deduc'd from the *Writers* of foreign Countries; since the remains of what are yet in being (notwithstanding the havock which has universally been made, and the little care to improve our *woods*;) may stand in fair competition with any thing that *Antiquity* can produce.

9. There is somewhere in *Wales* an *Inscription* extant, cut into the wood of an old *Beam*, thus,

SEXAGINTA PEDES FUERANT IN STIPITE NOSTRO,  
EXCEPTA COMA QUÆ SPECIOSA FUIT.

This must needs have been a noble *Tree*, but not without later *parallels*; for to instance in the several *species*, and speak first of the bulks of some immense *Trees*; there was standing an old and decay'd *Chestnut* at *Fraiting* in *Essex*, whose very stump did yield thirty sizable load of *Logs*; I could produce you another of the same kind in *Gloucestershire* which contains within the bowels of it a pretty wain-scotted Room inlighten'd with windows, and furnish'd with seats, &c. to answer the *Lician Platanus* lately mention'd.

10. But whilst I am on this period; see what a *Tilia* that most learn'd, and obliging person Sir *Tho. Brown* of *Norwich*, describes to me in a *Letter* just now receiv'd.

An extraordinary large, and stately *Tilia*, Linden or Lime-tree, there groweth at *Depeham* in *Norfolk*, ten miles from *Norwich*, whose measure is this. The compass in the least part of the Trunk or body about two yards from the ground, is at least eight yards and half: about the root nigh the earth, sixteen yards, about half

a yard above that, near twelve yards in circuit: The height to the uppermost boughs about thirty yards, which surmounts the famous *Tilia* of Zurich in Switzerland; and uncertain it is whether in any *Tilicetum*, or Lime-walk abroad it be considerably exceeded: Yet was the first motive I had to view it not so much the largeness of the Tree, as the general opinion that no man could ever name it; but I found it to be a *Tilia foemina*; and (if the distinction of Bauhinus be admitted from the greater, and lesser leaf) a *Tilia Platyphyllos* or *Latifolia*; some leaves being three inches broad; but to distinguish it from others in the Country, I call'd it *Tilia Colossia Depehamensis*. Thus that learned person.

A Poplar-tree not much inferior to this he informs me grew lately at Harlingly Thetford, at Sir William Gawdies gate, blown down by that terrible Hurricane about four years since.

But here does properly intervene that prodigious *Tilia* of Newstadt in the Dutchy of Wirtemberg, so famous for its monstrosity, that even the City it self receives a denomination from it, being call'd by the Germans *Neustadt under grossen Linden*, or *Newstadt* by the great Lime-tree. The circumference of the Trunk is 27 foot 4 fingers: The Ambitus or extent of the boughs 403 feet; the diameter from South to North 145, from East to West 119 foot; set about with divers Columns and Monuments of Stone (82 in number at present, and formerly above an hundred more) which several Princes, and noble Persons have adorn'd, and celebrated with Inscriptions, Arms, and Devices, and which, as so many Pillars, serve likewise to support the umbragious and venerable boughs: And that even the Tree had been much ampler, the Ruines, and distances of the Columns declare, which the rude Souldiers have greatly impair'd.

By the Date of the antientst Columns yet intire, namely Anno 1555. may be conjectur'd how goodly a Tree it was above an hundred and twenty years since. The Inscriptions on the several Arms and Supporters are as follows.

D. V. H. Z. W. CLL----- Graff zu Leuehtenberg. 1591. 1583. 1575. Albert von Rosenberg Ritter. 1591. Wolff Keidel alter Furlentum. 1555. Some report he planted it. Hans Heinrie vonder Tana. 1583. Conrad von Flbeg. 1575. Fritz Nerter von Hertenek. 1575. Wirich von Gemmingen. 1575. Bartol---Mot. 1555. V. Hans Funk der zeit Burgermeister Die erst. 1555. Hans Ulrich Stigelheimer zu Durathenig Fußlicher. hr. Hoffmeister. 1591.

Præsul de Langheim rediens Cisterliæ ab urbe  
Pyramidem hanc posuit flammis Cælestibus auctam.  
Sentiat hæc etiam Numen spirabile toto  
Pectore, & illius semper sit munere felix.

Johann.



*Johann. Abt zu Langh.* 1601. *Joh. Abt zu Schoenthal.* 1584. *Eberhard von Gemmingen.* 1555. *David von Helmstadt Amtman.* *Graff Friderich zu Mompelgard.* *Hans Heinrich von Lammestein.* *Sigismund Signiger.* L. H. Z. W. A. 353. *G. L. Marygraff au Brandemb.* 1562. *Georg. Ernest Graff zu Henneb. Herr zu Aschaffb.* 1575. *Michel Helmling Statt-Schreiber.* 1555. *Hans Ulrick von Steine.* 1575. *Daniel von Helmstatt. zu Kappenaw.* 1556. ——— *Stamel von Reischach.* 1575. *Wilhelm von Chrombach* 1588. *Bernolph von Gemmingen.* 1588. *Schweiker Wumbold von Umstatt.* 1591. *Heinrich Link Pfarrer zu Uden.* *Andreas von Oberbach Vorstmeist.* zu *Neu-Statt.* *Neubrecht Bart Keller zu Neustatt.* 1557. ——— *Ernberg.* *Thomas Busch von Schorndorff.* *Wolfgang von Gemmingen* 1588. *Feit Kumeter Forstmeister.* 1551. and 1530.

Together with several more too tedious to recite; and even these might have spar'd the Reader, but that I found the Instance so particular and solemn: But *this* (as we shall shew) comes not yet by forty foot near to the dimensions of an Oak standing lately in *Work-sop-Park*, belonging to his Grace the Duke of Norfolk Earl Marshal of England, spreading almost 3000 Yards square, and under the shade whereof, near a Thousand Horse might commodiously stand at once. But, besides this Gigantic Lime-tree, there is likewise a *White-thorn*, brought (as the Tradition goes) a small twig, out of *Palestine* Anno 1470. by *Eberhard* first Duke of *Wurtemberg*, and planted near *Tubing*, where he founded *St. Peters Monastery*, the Branches whereof being sustain'd by forty Columns of Stone, is yet a flourishing Tree: 'Tis probable that of *Glastenbury* is of this kind, and above a Thousand-years antienter, if the report be true. At *Forti* grows a *Filbert* whose Trunk is as big as three Mens middles: Near *Esling* is a *Juniper-tree* of almost two foot diameter in the lower trunk, and very tall: These Prodigies, with several more, we have from *Dr. Faber*, Physician to *Fredric Duke of Wurtemberg*, and Collected by the late industrious Jesuite *Schotti* in his *Appendix ad lib. 2. De Mirabilibus Miscellaneis*: Nor may here that goodly *Birch-tree* be forgotten, which growing in one of the Courts of the Palace of *Augustburgh*, is so spreading, as that the Branches will cover 365 Tables, even as many as there are Days in the Year, with its shade, as *Tavernier* tells us in his *Travels*. *Mr. Cook*, in his ingenious, and useful *Treatise*, mentions a *Witch-Elm* growing within these three, or four years in *Sr. Walter Baggot's Park* in the County of *Stafford*, which after too men had been five days felling, lay forty yards in length; Was at the stool seventeen foot diameter: It broke in the fall fourteen load of Wood, forty eight Load in the Top: Yielded eight pair of Naves, 8660. foot of Boards and Planks: It cost ten pounds seventeen Shillings the sawing, the whole esteem'd 97 Tuns: This was certainly a goodly Stick.

11. I am told of a very *Withy-tree* to be seen somewhere in *Bark-shire*, which is increased to a most stupendious bulk; and of two *Witch-hazel-trees* of prodigious size growing in *Okesey-Park*, belonging

belonging to Sir Edw. Pooles near *Malmesbury* in *Wiltshire*; not inferior to the largest *Oaks*: But these for arriving hastily to their *Acme*, and *period*, and generally not so considerable for their use; I pass to the *Ash*, *Elm*, *Oak*, &c.

There were of the first of these divers which measur'd in length one hundred and thirty two foot, sold lately in *Essex*: and in the Manor of *Horton* (to go no farther than the Parish of *Ebbham* in *Surrey*, belonging to my Brother *Richard Evelyn Esq;*) there are *Elms* now standing in good numbers, which will bear almost three foot square for more than forty foot in height, which is (in my judgement) a very extraordinary matter. They grow in a moist Gravel, and in the Hedge-rows.

Not to insist upon *Beech*, which are frequently very large; there are *Oaks* of forty foot high, and five foot diameter yet flourishing in divers old Parks of our Nobility and Gentry.

A large and goodly *Oak* there is at *Reedham* in Sir *Richard Bernays* Park of *Norfolk*, which I am inform'd was valu'd at forty pounds the Timber, and twelve pounds the lopping wood.

12. Nor are we to over-pass those memorable Trees which so lately flourished in *Dennington Park* near *Newbury*; amongst which, three were most remarkable from the ingenious Planter, and dedication (if Tradition hold) of the famous English Bard, *Jeoffry Chaucer*; of which one was call'd the *Kings*, another the *Queens*, and a third *Chaucer's Oak*. The first of these was fifty foot in height before any bough or knot appear'd, and cut five foot square at the butt-end, all clear Timber. The *Queens* was fell'd since the Wars, and held forty foot excellent Timber, straight as an arrow in growth and grain, and cutting four foot at the stub, and near a yard at the top; besides a fork of almost ten foot clear timber above the shaft, which was crown'd with a shady tuft of boughs, amongst which, some were on each side curved like *Rams-horns*, as if they had been so industriously bent by hand. This *Oak* was of a kind so excellent, cutting a grain clear as any *Clap-board* (as appear'd in the *Wainscot* which was made thereof) that a thousand pities it is some seminary of the *Acorns* had not been propagated, to preserve the species. *Chaucer's Oak*, though it were not of these dimensions, yet was it a very goodly Tree: And this account I receiv'd from my most honour'd friend *Phil. Packer Esq;* whose Father (as now the Gentleman + his Brother) was proprietor of this Park: But that which I would farther remark, upon this occasion, is, the bulk, and stature to which an *Oak* may possibly arrive within less than three hundred years; since it is not so long that our Poet flourish'd (being in the Reign of King *Edward the fourth*) if at least he were indeed the Planter of those Trees, as 'tis confidently affirm'd. I will not labour much in this enquiry; because an implicit faith is here of great encouragement; and it is not to be conceiv'd what Trees of a good kind, and in apt soil, will perform in a few years; and this (I am inform'd) is a sort of gravelly clay, moistn'd with small, and frequent springs. In the mean while, I have often wish'd, that Gentlemen were more curious of transmitting to Posterity, such Records, by noting the years when

when they begin any considerable *Plantation*; that the *Ages* to come may have both the satisfaction, and encouragement by more accurate and certain *Calculations*. I find a *Jewish* tradition, cited by the learned *Backart*, That *Noah* planted the *Trees* (he supposes *Cedars*) of which he afterwards built the *Ark* that preserv'd him: nor was it esteem'd any diminution for *Princes* themselves to plant *Trees* with that hand which held the *Scepter* and *Reins* of Empire: so as in the *Voorhout* of the *Hague*, stands a *Tree* plac'd there by the hands of the *Emperour Charles*, which is yet in its prime growth, and no small boast of the good people: But to proceed.

13. There was in *Cuns-burrow* (sometimes belonging to my Lord of *Dover*) several *Trees* bought by a *Couper*, of which he made ten pound per yard for three or four yards, as I have been credibly assur'd: But where shall we parallel that mighty *Tree* which furnish'd the *Main-mast* to the *Sovereign* of our *Seas*, which being one hundred foot long save one, bare thirty five inches diameter. Yet was this exceeded in proportion, and use, by that *Oak* which afforded those prodigious *beams* that lye thwart her. The diameter of this *Tree* was four foot nine inches, which yielded four square beams of four and forty foot long each of them. The *Oak* grew about *Framingham* in *Suffolk*; and indeed it would be thought fabulous, but to recount only the extraordinary dimensions of some *Timber-trees* growing in that *County*; and of the excessive sizes of these materials, had not mine own hands measur'd a *Table* (more than once) of above five foot in breadth, nine and an half in length, and six inches thick, all intire and clear: This plank cut out of a *Tree* fell'd down by my *Grandfathers* order, was made a *Pastry-board*, and lies now on a frame of solid *Brick-work* at *Watton* in *Surrey*, where it was so placed before the *room* was finish'd about it, or wall built, and yet abated by one foot shorter, to confine it to the intended dimensions of the place; for at first, it held this breadth, full ten foot and an half in length. *Mersennus* tells us that the *Great Ship* call'd the *Crown*, which the late *French King* caus'd to be built, has its *keel-timber* 120 foot long; and the *Main-mast* 12 foot diameter at the bottom, and 85 in height.

14. To these I might add a *Tew-tree* in the *Church-yard* of *Crowhurst* in the *County of Surrey*, which I am told is ten yards in compass; but especially that superannuated *Yew-tree* growing now in *Braburne Church-yard*, not far from *Scots-hall* in *Kent*; which being 58 foot 11 inches in the circumference, will bear near twenty foot diameter; as it was measur'd first by my self imperfectly, and then more exactly for me, by order of the Right Honourable Sir *George Carteret*, *Vice-Chamberlain* to his Majesty, and late *Treasurer* of the *Navy*: not to mention the goodly planks, and other considerable pieces of squar'd, and clear *Timber*, which I observ'd to lie about it, that had been hew'd, and sawn out of some of the *Arms* only torn from it by impetuous winds. Such another *Monster* I am inform'd is also to be seen in *Sutton Church-yard*, near *Winchester*. To these we add what we find taken notice of by the learned, and industriously curious *Dr. Plot* in his *Natural History*



*History of Oxfordshire*: particularly an *Oak* between *Nuncham Courtney* and *Clifton*, spreading from bough-end, to bough-end, 81 foot, shading in circumference 560 square yards of ground, under which 2420 men may commodiously stand in shelter. And a bigger than this near the Gate of the *Water-walk* at *Magdalen-Colledge*, whose branches shoot 16 yards from the stem; likewise of another at *Ricat* in the *Lord Norreys-park*, extending its Arms 54 foot, under which 304 horses or 4374 men may sufficiently stand: This is that *Robur Britannicum* so much celebrated by the late *Author of Dodonas Grove*, and under which he leans contemplating in the *Frontispiece*. But these (with infinite others, which I am ready to produce) might fairly suffice to vindicate, and assert our *Proposition*, as it relates to modern examples, and siezes of *Timber trees*, comparable to any of the *Ancients*, remaining upon laudable and unsuspected *Record*; were it not great ingratitude to conceal a most industrious, and no less accurate *Account*, which comes to my hands from Mr. *Halton*, Auditor to the Right Honorable, the most Illustrious, and Noble *Henry Duke of Norfolk, Earl-Marshall of England*.

In *Sheffield Lordship*.

The names of  
the Persons  
who gave intel-  
ligence of the  
particulars.  
Edw. Rawson.

15. In the *Hall Park*, near unto *Rivelin*, stood an *Oak* which had eighteen yards without bough, or knot; and carryed a yard and six inches square at the said height, or length, and not much bigger near the root: Sold twelve years ago for 11 li. Consider the distance of the place, and Country, and what so prodigious a Tree would have been worth near London.

cap. Bullock.

In *Firth's Farm* within *Sheffield Lordship*, about twenty years since, a Tree blown down by the wind, made, or would have made two *Forge-hammer-beams*, and in those, and the other wood of that Tree, there was of worth, or made 50 li. and *Godfrey Frogat* (who is now living) did oft say, he lost 30 li. by the not buying of it.

A *Hammer-beam* is not less than 7½ yards long, and 4 foot square at the barrel.

In *Sheffield Park*, below the *Manor*, a Tree was standing which was sold by one *Giffard* (servant to the then *Countess of Kent*) for 2 li. 10 s. to one *Nich. Hicks*; which yielded of sawn *Wair* fourteen hundred, and by estimation, twenty *Chords* of wood.

Ed. Morphy,  
Wood-ward.

A *Wuir* is two yards long, and one foot broad, sixscore to the hundred: so that, in the said Tree was 10080 foot of *Boards*; which, if any of the said *Boards* were more than half-inch thick, renders the thing yet more admirable.

In the upper end of *Rivelin* stood a Tree, call'd the *Lords-Oak*, of twelve yards about, and the top yielded twenty one *Chord*, cut down about thirteen years since.

In *Sheffield Park*, An. 1646. stood above 100 Trees worth 1000 li. and there are yet two worth above 20 l. still note the place, and market.

In

In the same *Park*, about eight years ago, *Ralph Archdall* cut a *Tree* that was thirteen foot *diameter* at the *Kerf*, or cutting place near the *Root*.

In the same *Park* two years since, *Mr. Sittwell*, with *Jo. Magson* did chuse a *Tree*, which after it was cut, and laid aside flat upon a level ground, *Sam. Staniforth* a *Keeper*, and *Ed. Morphy*, both on horse-back, could not see over the *Tree* one anothers *Hat-crowns*. This *Tree* was afterwards sold for 20 *li*.

In the same *Park*, near the old foord, is an *Oak-tree* yet standing, of ten yards *circumference*.

In the same *Park*, below the *Conduit Plain*, is an *Oak-tree* *Jo. Halton* which bears a *top*, whose *boughs* shoot from the *boal* some fifteen, and some sixteen yards.

Then admitting  $15\frac{1}{2}$  yards for the common, or mean extent of the *boughs* from the *boal*, which being doubled is 31 yards; and if it be imagin'd for a *diameter*, because the *Ratio* of the *diameter* to the *circumference* is  $\frac{22}{7}$  it follows  $113.355 :: 31.97\frac{1}{2}$  yards which is the *circumference* belonging to this *diameter*.

Then farther it is demonstrable in *Geometry*, that half the *diameter* multiplied into half the *circumference* produces the *Area* or quantity of the *Circle*, and that will be found to be  $754\frac{1}{2}$  which is 755 square yards *feré*.

Then lastly, if a *Horse* can be limited to three square yards of ground to stand on (which may seem a competent proportion of three yards long, and one yard broad) then may 251 *Horse* be well said to stand under the shade of this *Tree*. But of the more *Northern Cattle* certainly, above twice that number.

#### Worklopp-Park.

16. In this *Park*, at the corner of the *Bradshaw-rail*, lieth the *boal* of an *Oak-tree* which is twenty nine foot about, and would be found thirty, if it could be justly measur'd; because it lieth upon the ground; and the length of this *boal* is ten foot, and no arm, nor branch upon it. *Kenhelm Homer*

In the same *Park*, at the white gate, a *Tree* did stand that was from bough end to bough end (that is, from the extream ends of two opposite boughs) 180 foot; which is witness'd by *Jo. Magson* and *Geo. Hall*.

Then because 180 foot, or 60 yards is the *diameter*; 30 yards will be the *semidiameter*: And by the former Analogies

$$113.355 :: 60.188\frac{1}{2}$$

and

$$1.30 :: 94\frac{1}{2}.2827\frac{1}{2}$$

That is, the *Content* of ground upon which this *Tree* perpendicularly drops, is above 2827 square yards, which is above half an *Acre* of ground: And the assigning

Z

three

three square yards (as above) for an Horse, there may  
942 be well said to stand in this compass.

Jo. Magson.

In the same Park (after many hundreds sold, and carried away) there is a Tree which did yield *quarter-cliff bottoms* that were a yard square: and there is of them to be seen in *Worksopp* at this day, and some *Tables* made of the said *quarter-cliff* likewise.

In the same Park, in the place there call'd the *Hawks-nest*, are Trees forty foot long of *Timber*, which will bear two foot square at the top-end or height of forty foot.

If then a square whose side is two foot, be inscribed in a Circle, the proportions at that Circle are

	feet
Diameter	2 : 8284
Circumference	8 : 8858
Area	6 : 2831

And because a Tun of *Timber* is said to contain forty solid feet: one of these Columns of *Oak* will contain above six Tun of *Timber* and a quarter: in this computation taking them to be *Cylinders*, and not tapering like the segment of a *Cone*.

#### Welbeck Lane.

17. The *Oak* which stands in this Lane call'd *Grindal Oak*, hath at these several distances from the ground these *Circumferences*,

	foot	foot	inch
at 1	33	:	01
at 2	28	:	05
at 6	25	:	07

The breadth is from bough end to bough end (*i.*) *diametrically* 88 foot; the height from the ground to the top-most bough 81 foot [this *dimension* taken from the proportion that a *Gnomon* bears to the shadow] there are three *Arms* broken off and gone, and eight very large ones yet remaining, which are very fresh and good *Timber*.

88 foot is 29 $\frac{1}{2}$  yards, which being in this case admitted for the *diameter* of a circle, the *square yards* in that *circumference* will be 676 *ferd*; and then allowing three yards (as before) for a beast, leaves 225 beasts, which may possibly stand under this Tree.

But the *Lords Oak*, that stood in *Rivelin*, was in *diameter* three yards, and twenty eight inches; and exceeded this in *circumference* three feet, at one foot from the ground.

#### Shire-Oak.

Hen. Homer.

*Shire-Oak* is a Tree standing in the ground late Sir Tho. Hewets, about a mile from *Worksopp-Park*, which drops into three *Shires*, viz. *Tork*, *Nottingham* and *Derby*, and the distance from bough-end to bough-end, is ninety foot, or thirty yards.

This



This circumference will contain near 707 square yards, sufficient to shade 235 horse.  
Thus far the accurate Mr. Halton.

18. Being inform'd by a person of credit, that an Oak in *Sheffield-Park*, call'd the *Ladies Oak*, fell'd, contain'd forty two Tun of Timber, which had Arms that held at least four foot square for ten yards in length; the Body six foot of clear Timber: That in the same Park one might have chosen above 1000 Trees worth above 6000 li. another 1000 worth 4000 li. & *sc. de ceteris*. To this M. Halton replies, That it might possibly be meant of the *Lords-Oak* already mention'd to have grown in *Rivelin*: For now *Rivelin* it self is totally destitute of that issue she once might have gloried in of Oaks; there being only the *Hall-Park* adjoining, which keeps up with its number of Oaks. And as to the computation of 1000 Trees formerly in *Sheffield-Park* worth 6000 li. it is believ'd there were a thousand much above that value; since in what is now inclos'd, it is evident touching 100 worth a thousand pounds. I am inform'd that an Oak (I think in *Shropshire*) growing lately in a Copp'ce of my Lord *Cravens*, yielded 19 Tun and half of Timber, 23 Cord of Fire-wood, 2 load of Brush, and 2 load of Bark. And my worthy friend *Leonard Pinckney Esq;* lately first Clerk of his Majesties Kitchen, did assure me, that one *John Garland* built a very handsome Barne, containing five Bays, with Pan, Posts, Beams, Spars, &c. of one sole Tree, growing in *Worksopp-Park*. I will close this with an Instance which I greatly value, because it is transmitted to me from that honourable and noble Person Sir *Ed. Harley*: I am (says he) assur'd by an Inquisition taken about 200 years since, that a Park of mine, and some adjacent Woods, had not then a Tree capable to bear Acorns; Yet, that very Park I have seen full of great Oaks, and most of them in the extreamest Wane of decay. The Trunk of one of these Oaks afforded so much Timber, as upon the place would have yielded 15 li. and did compleatly seat with *Wain-scot* Pews a whole Church: You may please (says he, writing to Sir *Rob. Morray*) to remember when you were here, you took notice of a large Tree, newly faln; When it was wrought up, it proved very hollow and unsound: One of its cavities contain'd two Hogs-heads of Water, Another was filled with better stuff, Wax and Honey; Notwithstanding all defects, it yielded, besides three Tun of Timber, 23 Cords of Wood: But my own Trees are but Chips in comparison of a Tree in the Neighbour-hood, in which every foot forward one with another, was half a Tun of Timber, it bore 5 foot square, 40 foot long; It contain'd 20 Tun of Timber, most of it sold for 20 s. per Tun; besides that the Boughts afforded 25 Cords of Fuel-wood; This was call'd the *Lady-Oak*: Is't not pity such goodly creatures should be devoted to *Vulcan*? &c. So far this noble Gent. to which I would add *Dire*, a deep Exécration of *Iron-Mills*, and I had almost said *Iron-Masters* too,

*Quos ego; sed motos præstat componere* —

for I should never finish to pursue these *Instances* through our once goodly *Magazines* of *Timber* for all uses, growing in this our native *Country*, comparable (as I said) to any we can produce of *elder times*; and that not only (though chiefly) for the encouragement of *Planters*, and *Preservers* of one of the most excellent, and necessary *Materials* in the *World* for the benefit of *Man*; but to evince the continu'd *vigor* of *Nature*, and to reproach the want of *Industry* in this *Age* of ours; and (that we may return to the *Argument* of this large *Chapter*) to assert the *procerity*, and *stature* of *Trees* from their very great *Antiquity*: For certainly, if that be true, which is by divers affirmed concerning the *Quercetum* of *Mambre*, (where the *Patriarch* entertain'd his *Angelical* Guests) recorded by *Eusebius* to have continued till the time of *Constantine* the Great, we are not too prejudicately to censure what has been produc'd for the proofs of their *Antiquity*; nor for my part do I much question the *Authorities*: But let this suffice; what has been produc'd being not only an historical *speculation* of encouragement and use, but such as was pertinent to the *subject* under consideration, as well as what I am about to add concerning the *Texture*, and *similar* parts of the body of *Trees*, which may also hold in *shrubs*, and other *lignous* plants; because it is both a *curious*, and *Rational* account of their *Anatomization*, and worthy of the sagacious *Inquiry* of that learned Person, the late *Dr. Goddard*, as I find it entered amongst other of those precious *Collections* of this *Illustrians Society*.

19. The *Trunk* or bough of a *Tree* being cut transversely plain and smooth sheweth several *Circles* or *Rings* more or less *Orbicular*, according to the external figure, in some parallel proportion, one without the other, from the *centre* of the *Wood* to the inside of the *Bark*, dividing the whole into so many *circular* spaces. These *Rings* are more large, gross, and distinct in colour and substance in some kind of *Trees*, generally in such as grow to a great bulk in a short time, as *Fir*, *Ash*, &c. smaller or less distinct in those that either not at all, or in a longer time grow great; as *Quince*, *Holly*, *Box*, *Lignum-vite*, *Ebony*, and the like sad colour'd and hard *woods*; so that by the largeness, or smallness of the *Rings*, the quickness, or slowness of the growth of any *Tree* may perhaps at certainty be estimated.

These *spaces* are manifestly broader on the one side, than on the other, especially the more outer, to a double proportion, or more; the inner being near an equality.

It is asserted that the larger parts of these *Rings* are on the *South* and *sunny* side of the *Tree* (which is very rational and probable) insomuch, that by cutting a *Tree* transverse, and drawing a *diameter* through the broadest and narrowest parts of the *Rings*, a *Meridian* line may be described.

The outer spaces are generally narrower than the inner, not only in their narrower sides, but also on their broader, compared with the same sides of the inner: Notwithstanding which, they are for the most part, if not altogether, bigger upon the whole account.

Of

Of these spaces, the *outer* extremities in *Fir*, and the like *moods*, that have them larger and grosser, are more dense, hard, and compact; the inner more soft and spongy; by which difference of substance it is, that the *Rings* themselves come to be distinguished.

According as the bodies and boughs of *trees*, or several parts of the same, are bigger, or lesser, so is the *number*, as well as the *breadth* of the *circular* spaces greater or less; and the like, according to the *age*, especially the *number*.

It is commonly, and very probably asserted, that a Tree gains a *new* one every year. In the body of a great *Oak* in the *New-Forest*, cut *transversely even* (where many of the Trees are accounted to be some hundreds of years old) three, and four hundred have been distinguish'd. In a *Fir-tree*, which is said to have just so many rows of boughs about it, as it is of years growth, there has been observed just *one* less, immediately above one row, than immediately below: Hence some probable account may be given of the difference between the outer, and the inner parts of the *Rings*, that the *outermost* being newly produced in the *Summer*, the exterior superficies is condensed in the *Winter*.

20. In the young branches and twigs of *Trees* there is a *pith* in the middle, which in some, as *Ash*, and especially *Elder*, equals, or exceeds in dimensions the rest of the substance, but waxes less as they grow bigger, and in the great boughs and trunk scarce is to be found: This gives way for the growth of the inward *Rings*, which at first were less than the outer (as may be seen in any *shoot* of the first year) and after grow thicker, being it self *absurd*, or perhaps converted into *Wood*; as it is certain *Cartilages* or *Gristles* are into *bones* (in the bodies of *Animals*) from which to sense they differ even as much as pith from *Wood*.

These *Rings* or spaces appearing upon transverse *Section* (as they appear *elliptical* upon *oblique*, and straight lines upon direct *Section*) are no other than the extremities of so many *Integuments*, investing the whole *Tree*, and (perhaps) all the boughs that are of the same age with any of them, or older.

The growth of *Trees Augmentation* in all dimensions is acquired, not only by *accession* of a new *Integument* yearly, but also by the *Reception* of nourishment into the *Pores* and substance of the rest, upon which they also become thicker; not only those towards the middle, but also the rest, in a thriving *Tree*: Yet the principal growth is between the *bark* and *body*, by *accession* of a new *Integument* yearly, as hath been mentioned: Whence the cutting of the *bark* of any tree or bough round about, will certainly kill it.

The *bark* of a *Tree* is distinguished into *Rings*, or *Integuments* no less than the *Wood*, though much smaller or thinner, and therefore not distinguishable, except in the thick *barks* of great old *Trees*, and toward the *inside* next the *wood*; the outer parts drying and breaking with innumerable *fissures*, growing wider and deeper, as the body of the *Tree* grows bigger, and, mouldering away on the out-side.

Though it cannot appear by reason of the continual decay of  
it



it upon the account aforesaid ; yet it is probable, the *bark* of a *Tree* hath had successively as many *Integuments* as the *wood* ; and that it doth grow by acquisition of a *new one* yearly on the inside, as the *wood* doth on the out-side ; so that the chief way, and conveyance of nourishment to both the *wood* and the *bark*, is between them both.

The least *bud* appearing on the body of a *Tree*, doth as it were make *perforation* through the several *Integuments* to the middle, or very near ; which part is as it were, a *Root* of the bough into the body of the *Tree* ; and after becomes a *knot*, more hard than the other *wood* : And when it is larger, manifestly shewing it self also to consist of several *Integuments*, by the *circles* appearing in it, as in the body : more hard, probably ; because straitned in room for growth ; as appears by its distending, buckling, as it were, the *Integuments* of the *wood* about it ; so implicating them the more ; whence a *knotty* piece of *wood* is so much harder to cleave.

It is probable, that a *Cyon* or *Bud* upon *Grafting*, or *Inoculating*, doth, as it were, *Root* it self into the *stock* in the same manner as the *branches*, by producing a kind of *knot*. Thus far the accurate *Doctor*.

21. To which permit me to *add* only (in reference to the *Circles* we have been speaking of) what another curious *Inquirer* suggests to us ; namely, That they are caus'd by the *Pores* of the *wood*, through which the *Sap* ascends in the same manner as between the *Wood* and the *Bark* ; and that in some *Trees*, the *bark* adheres to the *wood*, as the *Integuments* of *Wood* cleave to one another, and may be separated from each other as the *bark* from the outward-most ; and being thus *parted*, will be found on their *out-sides* to represent the *Colour* of the outer-most, contiguous to the *bark* ; and on the *inner* sides, to hold the *Colour* of the *inner* side of the *bark*, and all to have a *deeper*, or *lighter* hue on their *inner-side*, as the *Bark* is on that part more or less *tinged* ; which *tinture* is suppos'd to proceed from the *ascendent Sap*. Moreover, by cutting the *branch*, the ascending *Sap* may be examin'd as well as the *Circles* : It is probable, the more frequent the *Circles*, the larger, and more copiously the *liquor* will ascend into it ; the fewer, the sooner descend from it. That a *Branch* of three *Circles* cut off at *Spring*, the *Sap* ascending, will be found at *Michaelmas* ensuing ; cut again in the same *branch*, or another of equal bigness, to have one more than it had at *Spring* ; and either at *Spring* or *Fall* to carry a *Circle* of *Pricks* next the *bark*, at other seasons a *circle* of *wood* only next it. But here the Comparison must be made with *distinction* ; for some *Trees* do probably shoot new *tops* yearly till a certain period, and not after ; and some have perhaps their *Circles* in their *branches* decreased from their *Bodies* to the extremity of the *branch*, in such *Oeconomy* and Order ; that (for instance) an *Apple-tree* shoot of this year has one *Circle* of *Pricks* or *wood* less, than the *Graft* of two years growth ; and that of two years growth, may the next year have one *Circle* more than it had the last year ; but this only till that *Branch* shoot no more *Grafts*,  
and

and then 'tis doubtful whether the outmost *twig* obtain any more *Circles*, or remain at a *stay*, only *nourished*, not *augmented* in the *Circles*. It would also be inquir'd, whether the *Circles of Pricks* increase not till *Midsummer* and after; and the *Circles of Wood* from *thence*, to the following *Spring*? But this may suffice, unless I should subjoin

22. The *vegetative* motion of *Plants*, with the *diagrams* of the *Jesuite Kercher*, where he discourses of their stupendious *Magnetisms*, &c. could there any thing material be added to what has already been so ingeniously inquir'd into by the learned *Dr. Grew* in his *Anatomy of Vegetables*, and that of *Trunks*; where experimentally, and with extraordinary sagacity, he discusses the present subject (with intire satisfaction of the inquisitive *Reader*) beginning at the *seeds*, to the formation of the *Root*, *Trunk*, *Branches*, *Leaves*, *Flower*, *Fruit*, &c. where you have the most accurate descriptions of the several *Vessels*, for *Sap*, *Air*, *Juices*, with the stupendious *Contexture* of all the *Organical* parts; and than which there can be nothing more fully entertaining: So that what *Dr. Goddard*, and other ingenuous men, have but conjecturally hinted, is by this inquisitive person (and *since*, that of the excellent *Mulphigius*,) evinced by *autoptical* experience, and profound research into their *Anatomy*; Let us therefore proceed to the *Felling*.

23. It should be in this *status*, vigour and perfection of *Trees*, that a *Felling* should be celebrated; since whiles our *Woods* are *growing* it is pity, and indeed too soon; and when they are *decaying*, too late: I do not pretend that a man (who has occasion for *Timber*) is obliged to attend so many ages ere he fell his *Trees*; but I do by this infer, how highly necessary it were, that men should perpetually be *Planting*; that so *posterity* might have *Trees* fit for their service of *competent*, that is, of a *middle* growth and age, which it is impossible they should have, if we thus continue to destroy our *Woods*, without this providential *Planting* in their stead, and *felling* what we do cut down, with great discretion, and regard of the future.

24. Such therefore as we shall perceive to *decay*, are first to be pick'd out for the *Ax*; and then those which are in their state, or approaching to it; but the very thriving, and manifestly improving, indulg'd as much as possible. But to explore the goodness and sincerity of a *standing-Tree*, is not the easiest thing in the world; we shall anon have occasion to mention my *L. Bacon's* Experiment to detect the *hollowness* of *Timber*: But there is doubtless none more infallible, than the *boring* it with a midling *Piercer* made *Auger* fashion, and by frequent pulling out, and examining what substance comes along with it, as those who bore the *Earth* to explore what *Minerals* the place is impregn'd with, and as sound *Cheeses* are tasted: Some again there are who by digging a little about the *Roots*, will pronounce shrewdly concerning the *state* of a *Tree*; and if they find him perish'd at the *top* (for *Trees* die upwards as *Men* do from the *feet*) be sure the cause lies deep,  
for

for 'tis ever a mark of great decay in the *Roots*. There is also a swelling *Vein* which discovers it self eminently above the rest of the *stem*, though like the rest, invested with *bark*, and which frequently circles about and embraces the *tree*, like a branch of *Ivy*, which is an infallible indication of *Hollowness* and hypocrisie within.

25. The time of the *year* for this destructive *work* is not usually till about the end of *April* (at which season the *bark* does commonly rise freely) though the opinions and practice of men have been very different: *Vitruvius* is for an *Autumnal fall*; others advise *December* and \**January*: *Cato* was of opinion *trees* should have first born their *fruit*, or, at least, not till full *ripe*, which agrees with that of the *Architect*; who begins his *Fell* from the commencement of *Autumn* to the *Spring*, when *Favonius* begins to spire, and his reason is; for that from *thence*, during all the *Summer*, *Trees* are as it were *Going with Child*, and diverting all their nourishment to the *Embryo*, *Leaves*, and *Fruit*, which renders them weak and infirm: This he illustrates from *Teeming Women*, who during their *pregnancy* are never so healthful, as after they are delivered of their burden, and abroad again; And for this reason (says he) those *Merchants*, who expose *Slaves* to *Sale*, will never *Warrant* one that is with *Child*; The *Buyer* was (it seems) to stand to the hazard; Thus he: But I remember *Monsieur Perrault* in his pompous *Edition* of our *Author*, and learned *notes* upon this *Chapter*, reproves the *Instance*, and corrects the *Text à disparatione procreationis*, &c. to *ad disparationem*, &c. affirming that *Women* are never more sound, and healthy than when they are *pregnant*; the nutrition deriv'd to the *Infant*, being (according to him) no diminution or prejudice to the *Mother*; as being but the consumption of that *humiditie*, which enfeeble the bearing *Woman*, and thence infers, that the *Comparison* cannot hold in *Trees*, which become so much *stronger* by it: But to insist no longer on this; There is no doubt, that whilst *Trees* abound in over-much crude, and superfluous moisture (though it may, and do contribute to their production and fertility) they are not so fit for the *Ax* as when being discharg'd of it, and that it rises not in that quantity as to keep on the *Leaves* and *Fruit*, those *laxed* parts, and *Vessels* by which the humour did ascend, grow dry, and close, and are not so obnoxious to putrefaction, and the worm; Hence it is, that he cautions us to take notice of the *Moons* decline, because of her dominion over *liquids*, and directs our *Woodman* (some days before he *falls* downright) to make the *gash* or overture, *Usque ad mediam medullam*, to the end the whole *moisture* may exstil; for that not only by the *Bark* (which those who resemble *Trees* to *Animals* will have to be *analogous* to *Arteries*) does the *Juice* drain out; but by that more *fatty*, and *whiter* substance of the *Wood* it self, immediately under the *Bark* (and which our *Carpenters* call the *Sap*, and therefore hew away, as subject to rot) which they will have to be the *Veins*: It is (say they) the office of these *Arteries* or *Bark*, receiving nourishment

\* Post ortum  
Pleiadum à die  
6 Kal. Jan. usq;  
ad Arcturi or-  
tum, scil. 8 Kal.  
Octob. Veget.  
vri milit. l. 5.  
c. 9.



richmerit from the *Roots*, to derive it to every part of the *Tree*, and to remand what is crude, and superfluous by the *Veins* to the *Roots* again; whence, after it has been better digested, it is made to ascend a second time by the other *Vessels* in perpetual *Circulation*; and therefore necessary so deep an incision should be made as may serve to exhaust both the *Venal*, and *Arterial* moisture: But for this nice *speculation* I refer the curious to the already mention'd Dr. *Grew*, and to the learned *Malpighius*, who have made other and far more accurate observations upon this subject: In the mean time, as to that of the *Worm*, though *Timber unbarked* be indeed more obnoxious to them, and to contract somewhat a darker hue (which is the reason so many have commended the *season* when it will most freely *strip*) yet were this to be rather consider'd for such *trees* as one would leave *round*, and *unsquar'd*; since we find the wild *Oak*, and many other sorts, *fell'd* over late, and when the *jap* begins to grow proud, to be very subject to the *worm*; whereas, being cut about *mid-Winter*, it neither *casts* *risks*, nor *twines*; because the cold of the *Winter* does both dry, and consolidate; while in *spring* and when pregnant, so much of the virtue goes into the *leaves* and *branches*: Happy therefore were it for our *Timber*, some real *Invention* of *Tanning* without so much *Bark* (as the Honourable Mr. *Charles Howard* has most ingeniously offer'd) were become universal, that *Trees* being more early felled, the *Timber* might be better *season'd* and condition'd for its various *Uses*. But as the custom is, men have now time to *fell* their *Woods*, even from *Mid-winter* to the *Spring*; but never any after the *Summer Solstice*: And now we speak of *Tanning*, they have in *Jamaica* the *Mangrove*, *Olive*, and a *third* whose *Barks* *Tan* much better than do ours in *England*; so as in six weeks, the *Leather* is fit to be employ'd to any use: They have likewise there a *Tree*, whose *Berries* wash better, and whiter than any *Castile-soap*.

26. Then for the *Age* of the *Moon*, it has religiously been observ'd; and that *Diana's* presidency in *Sylvia* was not so much celebrated to credit the *fictions* of the *Poets*, as for the Dominion of that moist *Planet*, and her influence over *Timber*: For my part, I am not so much inclin'd to these *Criticisms*, that I should altogether govern a *Felling* at the pleasure of this mutable *Lady*; however there is doubtless some regard to be had,

Nor is't in vain *Signs* fall and rise to note.

*Nec frustra signorum obitus speculamur, & ortus.*

The *Old Rules* are these:

Fell in the *decrease*, or four days after *conjunction* of the two great *Luminaries*; some the last quarter of it; or (as *Pliny*) in the very article of the *change*, if possible; which hapning (saith he) in the last day of the *Winter Solstice*, that *Timber* will prove *immortal*: At least should it be from the *twentieth* to the *thirtieth* day, according to *Columella*: *Cato* four days after the *Full*, as far better for the growth, nay *Oak* in the *Summer*: But all *vineous* *Trees* *silente Luna*; such as *Sallows*, *Birch*, *Poplar*, &c.

A a

*Vegetius*

*Vegetius* for *Ship timber*, from the *fifteenth* to the *twenty-fifth*, the *Moon* as before; but never during the *Increase*, Trees being then most abounding with moisture, which is the only source of putrefaction: And yet 'tis affirm'd upon unquestionable *Experience*, that *Timber* cut at any *season* of the year, in the *Old Moon*, or last *Quarter*, when the *Wind* blows *Westerly*; proves as sound, and good as at any other period whatsoever; nay, all the whole *Summer* long, as in any *Month* of the *Year*; (especially *Trees* that bear no fruit.) *Theophrastus* will have the *Fir*, *Pine* and *Pitch-tree* fell'd, when first they begin to bud: I enumerate them all, because it may be of great use on some publick emergencies.

27. Then for the *temper*, and time of day: The *Wind* low, neither *East* nor *West* (but *West* of the two) the *East* being most pernicious, and exposing it to the *worms*; and for which the best cure is, the plentiful sobbing it in *water*; neither in *frosty*, *wet*, or *dewy* weather; and therefore never in a *Fore-noon*, but when the season has been a good while *drie* and *calm*; for as the *Rain* sobs it too much, so the *Wind* closes, and obstructs the moisture from ouling out. Lastly, touching the *species*; Fell *Fir* when it begins to spring; not only because it will then best quit its coat and strip; but for that they hold it will never decay in *water*; which howsoever *Theophrastus* deduce from the old *Bridge* made of this material over a certain *River* in *Arcadia*, cut in this season, is hardly sufficient to satisfy our inquiry.

28. Previous to this work of *Felling* is the advice of our Countryman *Markham*, and it is not to be rejected: Survey (saith he) your *Woods* as they stand, immediately after *Christmas*, and then divide the *species* in your mind; (I add rather in some Note-Book, or *Tablets*;) and consider for what purposes every several kind is most useful, which you may find in the several *Chapters* of this *Discourse* under every *Head*. After this, reckon the *bad* and *good* together, so as one may put off the other, without being forc'd to glean your *Woods* of all your best *Timber*. This done (or before) you shall acquaint your self with the *marketable prices* of the *Countrey* where your *Fell* is made, and that of the several sorts; as what so many *inches* or *foot square*, and *long* is worth for the several employments: What *Planks*, what other scantlings, for so many *Spaaks*, *Naves*, *Rings*, *Pules*, *Poles*, *Spars*, &c. as suppose it were *Ash*, to set apart the *largest* for the *Wheel-wright*, the *smallest* for the *Cooper*, and that of ordinary scantling for the *Ploughs*, and the *brush* to be *kidded*; and sold by the hundred, or thousand, and so all other sorts of *Timber*, viz. *large*, *middling* *stuff*, and *Poles*, &c. allowing the waste for the charges of *Felling*, &c. all which you shall compute with greater certainty, if you have leisure, and will take the pains to examine some of the trees either by your own *Fathom*; or (more accurately) by *girting* it about with a *string*, and so reducing it to the *square*, &c. by which means you may give a near guess: or, you may mark such as you intend to *Fell*; and then begin your *sale* about *Candlemas* till the *Spring*; before which you must not (according as our Cu-

stom

stom is) lay the *Ax* to the *Root*; though some for particular imployments, as for *Timber* to make *Ploughs*, *Carts*, *Axle-trees*, *Naves*, *Harrows*, and the like *Husbandry-tools*, do frequently cut in *October*.

Being now entering with your *Workmen*, one of the first, and most principal things, is, the skilful *disbranching* of the *Boal* of all such *Arms*, and *Limbs* as may endanger it in the *Fall*, wherein much forecast and skill is requir'd of the *Wood-man*; so many excellent *trees* being utterly spoiled for want of this only consideration: And therefore in arms of *Timber*, which are very great, chop a *nick* under it close to the *Boal*, so meeting it with the downright strokes, it will be sever'd without *splicing*.

29. We have shew'd why some, four or five days before *felling*, bore the *Tree* cross-way; others cut a *kerf* round the body, almost to the very *pith*, or heart, and so let it reman a while; by this means to drain away the moisture, which will distill out of the wounded *Veins*, and is chiefly proper for the *moister* sort of *Trees*. And in this work the very *Ax* will tell you the difference of the *Sex*; the *Male* being so much harder, and browner than the *Female*: But here (and wherever we speak thus of *Plants*) you are to understand the *analogical*, not proper distinction.

30. But that none may wonder why in many *Authors* of good note, we find the *Fruit-bearers* of some *Trees* call'd *Males*, and not rather *Females*, as particularly the *Cypress*, &c. This preposterous denomination had (I read) its source from very antient *Custom*, and was first begun in *Aegypt* (*Diodorus* says in *Greece*) where we are told, that the *Father* only was esteem'd the sole *Author* of *Generation*; the *Mother* contributing only *Recaptacle*, and *Nutrition* to the *Off-spring*, which legitimated their *mixtures* as well with their *Slaves* as *Free-women*: And upon this account it was, that even *Trees* bearing *Fruit*, were amongst them reputed *Males*, and the *sterile* and barren ones, for *Females*; and we are not ignorant, how learnedly this *doctrine* has been lately reviv'd by some of our most celebrated *Physicians*: But since the same *Arguments* do not altogether quadrate in *Trees*, where the *Coition* is not so sensible (whatever they pretend of the *Palm*, &c. and other amorous intertwining of *Roots*) in my opinion we might with more reason call that the *Female* which bears any eminent *Fruit*, *Seed* or *Egg* (from whence *Animals*, as well as *Trees*, not excepting *Man* himself, as the learned *Steno*, *Swamerdam* and others have, I think, undeniably made it out) and them *Males* who produce none: But sometimes too the *rudeness*, or less *asperity* of the *leaves*, *bark*, and *grain*, nay their *Medical* operations, may deserve the distinction; to which *Aristotle* adds *Branchiness*, less *moisture*, quick *maturity*, &c. *l. 1. de Pl. c. 3.* All which seems to be most conspicuous in *Plum-trees*, *Hollys*, *Asbes*, *Quince*, *Pears*, and many other sorts; not to insist on such as may be compell'd even to change, as it were, their *Sex*, by *Grafting* and *artificial* Improvements: But I only hint it, and return to

31. *Felling*, which should be as close to the ground as possible may be, if you design a *renascency* from the *Roots*; unless you will



grab for a total destruction, or the use of that part we have already mention'd, so far superiour in goodness to what is more remote from the *Root*, and besides the longer you cut and convert the *Timber*, the better for many *uses*. Some are of opinion, that the *seedling Oak* should never be cut to improve his *boal*; because, say they, it produces a reddish wood not acceptable to the *Workman*; and that the *Tree* which grows on the *head* of his *Mother* does seldom prove good *Timber*: It is observ'd, indeed, that one foot of *Timber* near the *Root* (though divers I know who otherwise opine) and (which is the proper *kerse*, or cutting place) is worth *three* farther off: And haply, the *successor* is more apt to be tender, than what was cut off to give it place; but let this be enquir'd into at leisure: If it be a *Winter-fell*, for *fuel*, prostrate no more in a day, than the *Cattel* will eat in two days, I mean of the *browse-wood*, and when that's done, *kid*, and set it up an end, to preserve it from rotting.

32. When your *Tree* is thus prostrate, strip off the *bark*; and set it *so* as it may best dry; then cleanse the *Boal* of the *branches* which were left, and *saw* it into lengths for the *squaring*, to which belong the *Measure*, and *Girth* (as our *Workmen* call it) which I refer to the *Buyer*, and to many subsidiary *Books* lately *Printed*, wherein it is taught by a very familiar *Calcule Mechanical* and easie *Method*.

33. But by none in my apprehension set forth, in a more *facile*, and *accurate* way than what that Industrious *Mathematician* Mr. *Leybourn* has Publish'd, in his late *Line of Proportion made Easie*, and other his *Labours*; where he treats as well of the *Square* as the *Round*, as 'tis applicable to *Boards* and *Superficials*, and to *Timber* which is *hew'd* or less rough, in so *Easie* a *Method*, as nothing can be more desired. I know our ordinary *Carpenters*, &c. have generally upon their *Rulers* a *Line*, which they usually call *Gunters-Line*; but they few of them, understand how to *Work* from it: And divers *Countrie Gentlemen*, *Stewards*, and *Woodmen*, when they are to *Measure* Rough *Timber* upon the *Ground*, confide much to the *Girt*, which they do with a *string* at about four, or five foot distance from the *Root* or *Great Extream*: Of the *Strings* length, they take a *quarter* for the true *Square*, which is so manifestly erroneous, that thereby they make every *Tree* so *measur'd*, more than a *fifth* part less than *really* it is. This *mistake* would therefore be reformed; and it were (I conceive) worth the *seller's* while, to inspect it accordingly: Their *Argument* is, That when the *Bark* of a *Tree* is stripp'd, and the *Body* hew'd to a *Square*, it will then hold out no more measure; that which is cut off being only fit for *Fuel*, and the *Expence* of *squaring* costs more than the *Chips* are worth. But let us however *Convince* them of this *Error* by confronting the ensuing *Tables*.

## P R O B. I.

A *Tree* being 68 *Inches* about, to find how much thereof in *Length* will make one foot *Square*.

S O L.

S O L.

A fourth part of 60 *Inches*, is 15, which they take for the due *Square*; wherefore look for 15 *Inches* (*viz.* one foot three *Inches*) in the first *Column* of the first *Table*, and opposite to it in the second *Column*, you shall find 7 *Inches*, 6 tenth parts of an *Inch* (which is somewhat above half an *Inch*) will make one foot *square*. Again,

P R O B. II.

A *Tree* being 136 *Inches* about, and 9 *Foot* in length, to know how many *solid Feet* the *Tree* contains?

S O L.

The fourth part of 136 is 34 *Inches* in the first *Column* of the second *Table*, and 9 foot in the head of it; and opposite to the 34 *inches*, and under 9 foot, you shall find 72.25. (*viz.* 72 foot;) and for so much you may sell it, and no more, which is yet less than the true content by above a fifth part.

But supposing (as they ought to do) there were no such *Waste* as is pretended; you will find by the third *Table*, how much in length of any *Cylindrical Timber*, whose *Girt* is known, will make a foot *solid*, and consequently, detect the *Error* of the former customary practice.

P R O B. III.

A *Tree* being 60 *Inches* circumference, to know how much thereof will make a *cubical foot*.

S O L.

Find 60 *Inches* in the first *Column*; and opposite to it in the second *Column*, you shall find 0.6.0 which is to say, 6 *Inches* only: The *Consequence* is, that 6 *Inches* in length of a *Tree* 60 *Inches* Circumference, will make a foot *solid*: Whereas by the other usual procedure, you found there must be 7 *Inches* and above half an *Inch*, to make so much; which is above an *Inch* and half too much in every *Foot*s length, and what that amounts to in many *Feet* 'tis easy to imagine.

So suppose a *Tree* be but 29 *Inches* in Circumference, the same *Table* will in like manner shew, that it requires but 1 *Foot* 2 *Inches* and 3 tenth parts of an *Inch* in length, to make it a *Foot* *solid* of *Timber*; and thus of any number as far as you will enlarge your *Table*.

But then imagine that the *sides* of the *squares* at the extremities of *squar'd Timber* are unequal, as frequently it happens, by some-  
times

times 5, 6, 10, or more *Inches* difference: Some *Artificers* think they encounter this well enough by adding the *two sides* together, and taking the *moitie* of the side for the *true square*: But this is as *erronious* as the other; especially, if the *sides* differ considerably. *v.g.* Let one *side* be 30 *Inches*, and the other 138, these added, make 168, the half whereof is 84, which they estimate for the *true square*; whereas in truth, the *right square* is 74 *Inches*, and one tenth part; which demonstrates the *error* to be 32 *Inches* and 4 tenths.

To reform therefore this egregious *mistake*, the fourth *Table* may be calculated to what number of *Inches* you desire: *Example.*

## P R O B. IV.

One side of a square of Timber containing 16 *Inches*, and the other 25: to find the side of a square equal unto it.

## S O L.

First, find 16 *Inches* in the fourth *Table*, opposite to it you have this number 120411. Then find out 25 *Inches*, and opposite to that occurs 139794, which added, produces 260205, and the half of it 130102½. Find in the *Table* this Number (or the nearest you can to it) and you will see it to stand against 20 *Inches*; which is the *true square* of such an *unequal* 2-sided piece of Timber.

16	—	120411
25	—	139794
sum	—	260205
20	—	130102½

*Note*, In these *Instances* 'tis suppos'd the *Tree measur'd* to carry the same Proportion of *square* throughout the *Piece*, which in almost all *Trees* that are considerably long, does not hold, by reason of its continual *tapering*, which must need cause a great difference in the *squares* at either extrem. Our common *Workmen* do, to adjust this, for the most part, choose the most likely place about the middle of the *Tree*, and take its *square* there; But this is also an *Error*: Therefore in such *Trees*, measure the *square* at both ends, and add the *sides* of the two *squares* together, and half that length shall be the *true square* which the *Tree* does carry throughout. *E. g.*

Suppose a *Tree* have that side of the *square* at the *But-end* 32 *Inches*, and at the *smaller end* 22 only; Those added, will make 54 *Inches*, and the *moitie* of that 27, which is the *true side* of the *square*, with which, and the *length*, you may find by the second *Table* the just content.

And, in case your *Tree* be longer than the *Table* provides for (as for example in this second *Table* it proceeds but to 10 *Foot*) take the half, or so many times 10 *Foot*, as its *length* contains, and the odd *Feet*, if they happen, by themselves. *V. g.*

Suppose a *Tree* being 31 *Inches square*, is 47 *foot* long; have recourse to 10 *Foot* in the second *Table*, and opposite to 31 in the *Inch Column*,



*Column*, you'll find 64 *Foot*, 60 *parts* under the *Column* 10: put *this* down as many times as any *tens* occur in your 47 *Foot* (which was the length of that *Tree*) and by the same *Table* the odd 7 will give you 45 *Feet* 22 *parts*, which sum'd together, amount to 303 *Feet*, 62 *parts*, viz. half a *Foot* and half a quarter of a *Foot*. By this *Method* proceed for any length whatsoever.

There remains but one operation more, which our *Timber-man* can much stand in need of direction in; and that is, for the Measure of *Planks*; because we have occasion sometimes to saw them in the *Wood*: We will therefore add one *Table* more of that, and so dismiss him.

P R O B. V.

A *Plank* or *Board* being 9 *Inches* broad: to find how much in length will make one foot.

S O L.

First find out 9 *Inches* in the first *Column*; opposite to that, in the second *Column*, you shall meet 1. 4. 0. which imports 1 *Foot*, 4 *Inches*: so much then in length of a *Plank* or *Board* 9 *Inches* broad, must go to make a *Foot*: So as every 16 *Inches* in length, is a foot of *Plank*, and consequently, every 8 *Inches*, half a *Foot*; every 4 *Inches* a quarter, &c. Thus again, if a *Board* hold 2 *Foot* and 3 *Inches* in breadth; 5 *Inches* and 3 tenth parts of an *Inch* in length, will make a square superficial foot of *Plank*, & sic de ceteris.

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TABLE.

---

...and it is not possible to ...  
...which will give ...  
...and it is not possible to ...  
...which will give ...  
...and it is not possible to ...  
...which will give ...  
...and it is not possible to ...  
...which will give ...  
...and it is not possible to ...  
...which will give ...

...to find how much in ...

...in the ...  
...and it is not possible to ...  
...which will give ...  
...and it is not possible to ...  
...which will give ...  
...and it is not possible to ...  
...which will give ...  
...and it is not possible to ...  
...which will give ...  
...and it is not possible to ...  
...which will give ...

TABLE

*T A B L E I.*

<i>The Square of the End of Timber in Feet and Inches.</i>			<i>The length of a Foot Solid in Feet, Inches and parts of Inches.</i>		
F.	In.	F.	In.	Pts.	
0	6	4	0	0	
	7	2	11	2	
	8	2	3	0	
	9	1	9	3	
	10	1	3	3	
	11	1	2	3	
I	0	1	0	0	
	1	0	10	2	
	2	0	8	8	
	3	0	7	6	
	4	0	6	7	
	5	0	5	9	
	6	0	5	3	
	7	0	4	8	
	8	0	4	3	
	9	0	3	9	
	10	0	3	5	
	11	0	3	3	
II	0	0	3	0	
	1	0	2	8	
	2	0	2	6	
	3	0	2	3	
	4	0	2	2	
	5	0	2	1	
	6	0	1	9	
	7	0	1	8	
	8	0	1	7	
	9	0	1	6	
	10	0	1	5	
	11	0	1	4	
III	0	0	1	3	

B b

*T A B L E*



## TABLE II.

The length of the Timber.

In.	1		2		3		4		5	
	F.	Pt.	F.	Pt.	F.	Pt.	F.	Pt.	F.	Pt.
-	0	00	0	00	0	00	0	01	0	01
1	0	01	0	01	0	02	0	03	0	03
-	0	01	0	03	0	05	0	06	0	08
2	0	03	0	05	0	08	0	11	0	14
-	0	04	0	08	0	13	0	17	0	21
3	0	06	0	12	0	18	0	25	0	31
-	0	08	0	17	0	25	0	34	0	42
4	0	11	0	22	0	33	0	44	0	55
-	0	14	0	28	0	42	0	56	0	70
5	0	17	0	25	0	52	0	69	0	81
-	0	21	0	42	0	63	0	84	1	05
6	0	25	0	50	0	75	1	00	1	25
-	0	29	0	58	0	88	1	17	1	46
7	0	34	0	68	1	02	1	36	1	70
-	0	39	0	78	1	17	1	56	1	95
8	0	44	0	89	1	33	1	77	2	22
-	0	50	1	90	1	50	1	01	2	51
9	0	56	1	12	1	68	2	25	2	81
-	1	63	1	25	1	88	2	51	3	13
10	1	69	1	39	2	08	2	47	3	47
-	1	76	1	53	2	29	3	06	3	82
11	1	84	1	68	2	52	3	36	4	20
-	1	92	1	84	2	76	3	67	4	59
12	1	00	2	90	3	00	4	00	5	00
-	1	08	2	17	3	25	4	34	5	42
13	1	17	2	35	3	51	4	69	5	87
-	1	26	2	53	3	80	5	06	6	33
14	1	36	2	72	4	08	5	44	6	80
-	1	46	2	92	4	38	5	80	7	30
15	1	55	3	12	4	68	6	25	7	81
-	1	67	3	33	5	00	6	67	8	34
16	1	78	3	55	5	33	7	11	8	89
-	1	89	3	78	5	67	7	56	9	45
17	2	01	4	01	6	02	8	03	10	03
-	2	13	4	25	6	38	8	51	10	63
18	2	25	4	50	6	25	9	00	11	25

TABLE

# TABLE II.

The length of the Timber.

In.	6		7		8		9		10	
	F.	Pt.	F.	Pt.	F.	Pt.	F.	Pt.	F.	Pt.
-	0	01	0	01	0	01	0	02	0	02
1	0	04	0	05	0	05	0	06	0	07
-	0	09	0	11	0	13	0	11	0	16
2	0	17	0	19	0	22	0	25	0	28
-	0	26	0	30	0	34	0	39	0	43
3	0	37	0	43	0	49	0	56	0	62
-	0	51	0	59	0	68	0	76	0	85
4	0	66	0	78	0	89	0	99	1	11
-	0	84	0	98	1	12	1	26	1	40
5	1	04	1	22	1	39	1	56	1	74
-	1	26	1	47	1	68	1	89	2	10
6	1	50	1	55	2	00	2	25	2	50
-	1	76	2	05	2	34	2	64	2	93
7	2	04	2	38	2	72	3	06	3	40
-	2	34	2	73	3	12	3	51	3	90
8	2	66	3	11	3	55	3	99	4	44
-	3	01	3	51	4	01	4	52	5	02
9	3	37	3	93	4	49	5	06	5	62
-	3	76	4	29	5	01	5	64	6	27
10	4	16	4	86	5	55	6	24	6	94
-	4	59	5	35	6	12	6	88	7	65
11	5	04	5	88	6	72	7	56	8	40
-	5	51	6	43	7	35	8	27	9	19
12	6	00	7	00	8	00	9	00	10	00
-	6	51	7	51	8	68	9	76	10	85
13	7	04	8	22	9	39	10	56	11	74
-	7	59	8	86	10	13	11	39	12	66
14	8	16	9	53	10	89	12	25	13	61
-	8	76	10	22	11	68	13	14	14	60
15	9	37	10	93	12	49	14	06	15	62
-	10	01	11	67	13	34	15	01	16	68
16	10	67	12	44	14	22	16	00	17	78
-	11	34	13	24	15	13	17	02	18	91
17	12	04	14	05	16	05	18	06	20	07
-	12	76	14	89	17	01	19	14	21	27
18	13	50	15	75	19	00	20	25	22	50

\* Note that the short lines of the Inch-Column, between the Figures 1-2-3 &c. do signifie half-Inches.

TABLE II.						TABLE II.					
The length of the Timber.						The length of the Timber.					
In.	1	2	3	4	5	In.	6	7	8	9	10
	F. Pt.	F. Pt.	F. Pt.	F. Pt.	F. Pt.		F. Pt.	F. Pt.	F. Pt.	F. Pt.	F. Pt.
-	2 38 4	75 7	13 9	51 11	88	-	14 26	16 64	19 01	21 39	23 77
19	2 51 5	01 7	52 10	03 12	53	19	15 04	17 55	20 05	22 56	25 07
-	2 64 5	28 7	82 10	56 13	20	-	15 64	18 49	21 13	23 77	26 41
20	2 78 5	55 8	33 11	11 13	89	20	16 67	19 40	22 22	25 00	27 78
-	2 92 5	83 8	75 11	67 14	59	-	17 51	20 42	23 34	26 29	18
21	3 06 6	12 9	18 12	25 15	31	21	18 37	21 43	24 49	27 56	30 62
Square of the Timber in inches and half-inches.	-	3 11 6	42 9	63 12	84 16	05	-	19 26	22 47	25 68	28 89
	22	3 36 6	72 10	08 13	44 16	80	22	20 16	23 53	26 89	30 25
	-	3 51 7	03 10	55 14	06 17	58	-	21 09	24 61	28 13	31 64
	23	3 67 7	34 11	02 14	69 18	36	23	22 04	25 71	29 38	33 06
24	3 33 7	67 11	50 15	34 19	17	-	23 01	26 84	30 68	34 51	38 35
-	4 00 8	00 12	00 16	00 20	00	24	24 00	28 00	32 00	36 00	40 00
Square of the Timber in inches and half-inches.	-	4 16 8	33 12	50 16	66 20	83	-	24 99	29 16	33 33	37 49
	25	4 34 8	68 13	02 17	36 21	70	25	26 04	30 38	34 72	39 06
	-	4 51 9	02 13	54 18	05 22	56	-	27 08	31 59	36 10	40 62
	26	4 69 9	39 14	08 18	77 23	47	26	28 16	32 86	37 55	42 24
-	4 88 9	75 14	63 19	51 24	38	-	29 26	34 14	39 01	43 89	48 77
27	5 06 10	12 15	19 20	25 25	31	27	30 38	35 44	40 50	45 57	50 63
Square of the Timber in inches and half-inches.	-	5 25 10	50 15	75 21	00 26	25	-	31 50	36 75	42 00	47 25
	28	5 44 10	89 16	33 21	78 27	22	28	32 67	38 11	43 56	49 00
	-	5 67 11	34 17	01 22	68 28	35	-	34 02	39 69	45 36	51 03
	29	5 84 11	68 17	52 23	36 29	20	29	35 04	40 88	46 72	52 56
-	6 04 12	08 18	13 24	17 30	21	-	36 26	42 30	48 34	54 39	60 43
30	6 25 12	50 18	75 25	00 31	25	30	37 50	43 75	50 00	56 25	62 50
Square of the Timber in inches and half-inches.	-	6 46 12	92 19	38 25	84 32	30	-	38 76	45 22	51 68	58 14
	31	6 67 13	34 20	02 26	69 33	36	31	40 04	46 71	53 36	60 06
	-	6 89 13	78 20	67 27	56 34	45	-	41 34	48 23	55 12	62 01
	32	7 11 14	22 21	33 28	44 35	55	32	42 66	49 78	56 89	63 99
-	7 33 14	66 21	99 29	33 36	66	-	43 99	51 33	58 66	65 99	73 33
33	7 56 15	12 32	68 30	24 37	81	33	45 37	52 93	60 49	68 06	75 62
Square of the Timber in inches and half-inches.	-	7 78 15	56 23	34 31	12 38	90	-	46 68	54 46	62 24	70 02
	34	8 03 16	05 24	08 32	11 40	14	34	48 17	56 19	64 22	72 25
	-	8 26 16	52 24	79 33	05 41	31	-	49 58	57 84	66 10	74 37
	35	8 54 17	01 25	52 34	03 42	53	35	51 04	59 55	68 05	76 56
-	8 70 17	50 26	25 35	00 43	75	-	52 50	61 25	70 00	78 75	87 50
36	9 00 18	00 27	00 36	00 49	00	36	45 00	63 00	72 00	81 00	90 00

TABLE



TABLE III.

The Circumference of the Tree in Inches.				The Circumference of the Tree in Inches.				The Circumference of the Tree in Inches.			
Cir.	Feet	Inch.	Pt.	Cir.	Feet	In.	Pt.	Cir.	F.	In.	Pt.
10	18	11	2	51	0	8	3	92	0	2	6
11	14	11	5	52	0	8	0	93	0	2	5
12	12	6	8	53	0	7	8	94	0	2	5
13	10	8	5	54	0	7	4	95	0	2	4
14	9	2	7	55	0	7	2	96	0	2	4
15	7	10	3	56	0	6	9	97	0	2	3
16	7	0	8	57	0	6	7	98	0	2	3
17	6	3	0	58	0	6	4	99	0	2	2
18	5	7	0	59	0	6	2	100	0	2	2
19	5	0	2	60	0	6	0				
20	4	6	3	61	0	5	8				
21	4	1	2	62	0	5	6				
22	3	8	9	63	0	5	5				
23	3	4	9	64	0	5	2				
24	3	1	7	65	0	5	1				
25	2	10	7	66	0	4	9				
26	2	8	1	67	0	4	8				
27	2	5	8	68	0	4	7				
28	2	3	7	69	0	4	6				
29	2	1	8	70	0	4	4				
30	2	0	1	71	0	4	3				
31	1	10	6	72	0	4	2				
32	1	9	2	73	0	4	1				
33	1	7	9	74	0	3	9				
34	1	6	8	75	0	3	8				
35	1	5	7	76	0	3	7				
36	1	4	7	77	0	3	7				
37	1	3	8	78	0	3	6				
38	1	3	0	79	0	3	5				
39	1	2	3	80	0	3	4				
40	1	1	6	81	0	3	3				
41	1	0	9	82	0	3	2				
42	1	0	3	83	0	3	2				
43	0	11	7	84	0	3	1				
44	0	11	1	85	0	3	0				
45	0	10	7	86	0	2	9				
46	0	10	2	87	0	2	9				
47	0	9	9	88	0	2	8				
48	0	9	4	89	0	2	7				
49	0	0	0	90	0	2	7				
50	0	8	7	91	0	2	6				

TABLE IV.

## TABLE IV.

In.		In.		In.		In.	
1	009000	26	141497	51	170757	76	188081
2	039103	27	143136	52	171600	77	188649
3	047712	28	144715	53	172427	78	189209
4	062206	29	146239	54	173239	79	189762
5	069897	30	147712	55	174036	80	190309
6	077815	31	149136	56	174818	81	190848
7	084509	32	150525	57	175587	82	191381
8	090308	33	151851	58	176342	83	191907
9	095424	34	153147	59	177085	84	192428
10	100000	35	154406	60	177815	85	192941
12	104139	36	155630	61	178532	86	193449
13	107918	37	156820	62	179239	87	193952
13	111394	38	157978	63	179934	88	194448
14	114612	39	159106	64	180618	89	194939
15	117609	40	160205	65	181291	90	195624
16	120411	41	161278	66	181954	91	195904
17	123044	42	162325	67	182607	92	196378
18	125527	43	163346	68	183250	93	196848
19	127875	44	164345	69	183885	94	197312
20	130102	45	165321	70	184509	95	197772
21	132221	46	166275	71	185125	96	198217
22	134242	47	167209	72	185735	97	198677
23	136172	48	168124	73	186832	98	199122
24	138021	49	169019	74	186923	99	129563
25	139794	50	169807	75	187506	100	200000

TABLE

**TABLE V.**

*The Breadth of Plank in Feet and Inches.*

F.	In.	F.	In.	Pts.
0	1	12	0	0
	2	6	0	0
	3	4	0	0
	4	3	0	0
	5	2	4	8
	6	2	0	0
	7	1	8	6
	8	1	6	0
	9	1	4	0
	10	1	2	4
	11	1	1	1
I	0	1	0	0
	1	0	11	8
	2	0	10	3
	3	0	9	6
	4	0	9	0
	5	0	8	5
	6	0	8	0
	7	0	7	6
	8	0	7	2
	9	0	6	8
	10	0	6	3
	11	0	6	2
II	0	0	6	0
	1	0	5	8
	2	0	5	3
	3	0	5	3
	4	0	5	1
	5	0	5	0
	6	0	4	8
	7	0	4	7
	8	0	4	5
	9	0	4	4
	10	0	4	3
	11	0	4	1
III	0	0	4	0

*The length of a Foot square, in Feet and 10th. part of Inches.*

**TABLE**



Or by a smaller *Compendium* in the following *Tables*.

TABLE VI.						TABLE VII.						TABLE VIII.					
Inches	Feet	Inches	10 Parts of an Inch	10 Parts of a 10 <sup>th</sup> P.		Inches	Feet	Inches	10 Parts of an Inch	10 Parts of a 10 <sup>th</sup> P.		Inches	Feet	Inches	10 Parts of an Inch	10 Parts of a 10 <sup>th</sup> P.	
1	144	00	00	00	16 6	7	5	1	12	00	0	16 9	0	1	113	01	7
2	36	00	0	0	17 5	9	7	2	06	00	0	17 8	4	2	28	03	4
3	16	00	0	0	18 5	3	3	3	04	00	0	18 8	0	3	12	06	8
4	9	00	0	0	19 4	7	8	4	03	00	0	19 7	5	4	7	00	8
5	5	09	1	2	20 4	3	2	5	02	04	3	20 7	2	5	4	06	3
6	4	00	0	0	21 3	9	1	6	02	00	0	21 6	8	6	3	01	7
7	3	11	2	6	22 3	5	7	7	01	08	5	22 6	5	7	2	03	7
8	2	03	0	0	23 3	2	6	8	01	06	0	23 6	2	8	1	09	2
9	1	09	3	3	24 3	0	0	9	01	04	0	24 6	0	9	1	04	7
10	1	05	2	8	25 2	7	6	10	01	02	4	25 5	7	10	1	01	5
11	1	02	2	8	26 2	5	5	11	01	01	9	26 5	5	11	1	12	2
12	1	00	0	0	27 2	3	7	12	01	00	0	27 5	3	12	9	4	2
13	0	10	2	2	28 2	2	0	13	11	0	7	28 5	1	13	8	0	3
14	0	08	8	1	29 2	0	5	14	10	2	8	29 4	9	14	6	9	2
15	0	07	6	8	30 1	9	2	15	05	5	0	30 4	8	15	6	0	3

### Explanation.

An *Inch* being divided into 10 equal parts, and every of these parts into as many, makes the *Inch* to contain 100 equal parts.

### TABLE VI.

The first *Column* containing any number of *Inches* from 1 to 30, you have in each *Table* the length of a foot in feet and *Inches*, and the tenth part of an *Inch* to a tenth of a tenth, viz. to the hundredth part.

Example, for Timber Measure.

I would know how long a piece of *Timber* of 10 *Inches* square ought to be to contain a foot of *Timber*? Look 10 in the left-hand *Column*, opposite to which you will find 1 foot 5 *Inches* 2 tenths of an *Inch*, and 8 tenths of a tenth part of an *Inch*.

TABLE

## TABLE VII.

*Example, for Board-measure.*

I would know how long a *Board* must be of 5 *Inches* broad, to make a *Foot* of *Board*? Find out 5 in the left-hand *Column*, opposite to which you have 2 *Foot*, 4 *Inches*, eight tenth parts.

## TABLE VIII.

*Example of Round Timber Measure.*

I would know how much an exact round piece of *Timber* containing but one *Inch* in *diameter* must be in length, to make a *Cube* or *Foot* of *solid Timber*? Look fig. 1. in the left hand *Column*, and opposite to it, you will find 113 *Foot*, 1 tenth, 7 tenth parts of an *Inch*, and one tenth part of a tenth part; which in all contains 1728 *Inches*, the thing you sought: and so of the rest.

But all these *questions* are most exactly, and *Mathematically* demonstrated by Mr. *Cooke*, where also of taking the *Altitude* of *Trees* the better to judge of the worth of them, with the *Measuring* of *Wood-Lands*, &c. together with necessary *Calculations* for the *levelling* of *Ground*, and removing of *Earth*, drawing of *Plots*, and *Figures*, all which are very conducive to the several *Arguments* of this *Sylvan Work*. But to proceed.

34. If you are to remove your *Timber*, let the *Dew* be first off, and the *South-wind* blow before you *draw* it: neither should you by any means put it to use for three, or four *months* after, unless great necessity urge you, as it did *Duilius*, who in the *Punic War*, built his *Fleet* of *Timber* before it was *season'd*, being not above two months from the very *Felling* to the *Launching*: and as were also those *Navies* of *Hiero* after forty days; and that of *Scipio*, in the third *Carthaginian War*, from the very *Forest* to the *Sea*. *July* is a good time for bringing home your *fell'd Timber*: But concerning the *Time*, and *Season* of *Felling*, a just *Treatise* might be written: Let the *Learned* therefore consult *Vitruvius* particularly on this subject, l. 2. c. 19. Also *M. Cato* c. 17. *Plin.* l. 16. c. 31. *Constantinus* and *Heron.* l. 3. de *RR. Veget.* l. 4. c. 35. *Columella* l. 3. c. 2. but especially the most ample *Theophrastus* *quarv isogelas*, l. 5. Note, that a *Tun* of *Timber* is forty solid *Feet*, a *Load*, fifty.

35. To make excellent *Boards* and *Planks*, 'tis the advice of some, you should *Bark* your *Trees* in a fit season, and so let them stand *naked* a full year before the *selling*; and in some cases, and grounds, it may be profitable: But let these, with what has been already said in the foregoing *Chapters* of the several *kinds*, suffice for this *Article*: I shall add one *Advertisement* of *Caution* to those *Noble Persons*, and others who have *Groves*, and *Trees* of ornament near their *houses*, and in their *Gardens* in *London*, and

the *Circle* of it; especially, if they be of great *stature*, and well grown; such as are the *Groves* in the several *Inns of Court*; nay, even that (comparatively, new *Plantation*) in my Lord of *Bedfords* Garden, &c. and wherever they stand in the more interior parts of the *City*; that they be not over hasty, or by any means perswaded to cut down any of their *old Trees*, upon hope of new more flourishing *Plantations*; thickning, or repairing deformities; because they grew so well when first they were set: It is to be consider'd how exceedingly that pernicious *smoak* of the *Sea-coal* is increas'd in, and about *London* since they were first planted, and the buildings environing them, and inclosing it in amongst them, which does so universally contaminate the *Air*, that what *Plantations* of *Trees* shall be now begun in any of those places, will have much ado, great difficulty, and require a long time, to be brought to any tolerable perfection: Therefore let them make much of what they have; and though I discourage none, yet I can animate none to cut down the *old*.

¶ 36. And here might now come in a pretty *speculation*, what should be the *Reason* after general *Fellings*, and *Extirpations* of vast *Woods* of one *species*, the next *spontaneous* succession should be of quite a different *sort*? We see indeed something of this in our *Gardens* and *Corn fields* (as the best of *Poets* witnesses) but that may be much imputed to the alteration, by improvement, or detriment of the *Soyl* and other *Accidents*: whatever the *Cause* may be, since it appears not in any universal decay of *Nature* (sufficiently exploded) I shall only here produce matter of *Fact*, and that it ordinarily happens. As in some goodly *Woods* formerly belonging to my *Grandfather* that were all of *Oak*; after felling, they universally sprung up *Beech*; and 'tis affirm'd by general Experience, that after *Beech*, *Birch* succeeds; as in that famous *Wood* at *Darnway* on the *River Tindanne* in the *Province of Moray* in *Scotland*, where nothing had grown but *Oak* in a *Wood* three miles in length, and happily more southerly, it might have been *Beech*, and not *Birch* till the third degradation. *Birches* familiarly grow out of *old*, and decay'd *Oaks*; but whence this *sympathy*, and affection should proceed, is more difficult to resolve, in as much as we do not detect any so prolific, and eminent *seed* in that *Tree*. Some *Accidents* of this nature may be imputed to the *Winds*, and the *Birds* who frequently have been known to waft, and convey *seeds* to places widely distant, as we have touch'd in the *Chapter of Firs*, &c. *sect. 4.* *Holly* has been seen to grow out of *Ash*, as *Ash* out of several *Trees*, especially *Hai-Thorn*; nay, in an old rotten *Ash-stump*, in a place where no *Ashes* at all grew by many miles in the whole *County*: And I have had it confidently asserted by *Persons* of undoubted truth, that they have seen a *Tree* cut in the middle, whose heart was *Ash-wood*, and the exterior part *Oak*, and this in *Northamptonshire*: And why not as well (though with something more difficulty?) as through a *Willow*, whose *Body* (as is noted) it has been observed to penetrate even to the *Earth*; obtruding the *Willow* quite out of its place, of which



a pretty *Emblem* might be conceiv'd : But I pursue these *Instances* no farther, concluding this *Chapter* with the *Norway Engine*, or *Saw-Mill*, to be either moved with the force of *Water*, or *Wind*, &c. for the more expedite *cutting*, and converting of *Timber*, to which we will add another, for the more facile *perforation* and boring of *Elms*, or other *Timber* to make *Pipes* and *Aqueducts*, and the excavating of *Columns*, to preserve their *shafts* from *splitting*, to which otherwise they are obnoxious.

The *Frames* of both these *Instruments* discover themselves sufficiently to the *eye*, and therefore will need the less description ; There is yet this reformation from those which they use both in *Norway*, and *Switzerland* ; That whereas they make the *Timber* approach the *Saws*, by certain indented *Wheels* with a *Rocket* (which is frequently out of order) there is in the *first Figure*, a substitution of two *Counterpoises* of about three hundred pound weight, each, as you may see at A. A. fastning the *Cords* to which they append, at the extrems of two moveable *pieces* of *Timber*, which slide on two other *pieces* of fixed *Wood*, by the aid of certain small *Pullys*, which you may imagine to be within an *Hinge* in the *House* or *Mill*, by which means the *Weights* continually draw, and advance the moving *pieces* of *Wood*, and consequently the *Timber* to be *sit*, fastned 'twixt the said *Pieces*, towards the *Teeth* of the *Saws*, rising, and falling as the motion of the *Wheel* directs ; And on this *Frame* you may put four or five *Saws*, or more if you please, and place them at what intervals you think fit, according to the dimensions which you design in cutting the *Timber* for your use ; and when the piece is *sawn*, then one or two men with a *Lever* must turn a *Roller*, to which there is annex a strong *Cord*, which will draw back the *Piece*, and lift up the *Counter-poise* ; and so the *piece* put a little towards one side, direct the *Saws* against another.

The *second Figure* for *Boring*, consists of an *Ax-tree*, to which is fastned a *Wheel* of six and thirty *Teeth*, or more, as the velocity of the *Water-motion* requires ; for if it be *slow*, more *Teeth* are requisite ; There must also be a *Pinion* of six, turn'd by the said indented *Wheel* : Then to the *Ax-tree* of the *Pinion* is to be fixt a long *Auger*, as in letter A, which must pass through the *hole* B, to be opened, and clos'd as occasion requires, somewhat like a *Turners Lathe* : the *Tree* or piece of *Timber* to be *Bored*, is to be plac'd on the *Frame* C D, so as the *Frame* may easily slide by the help of certain small *Wheels*, which are in the *bollow* of it, and turn upon strong *Pins*, so as the *Work-man* may shove forwards, or draw the *Tree* back, after 'tis fastned to the *Frame* ; that so the *Auger* turning, the end of the *Tree* may be applied to it ; still remembering to draw it back at every progress of three, or four *inches*, which the *Auger* makes for the cleansing it from the *Chips*, lest the *Auger* break : Continue this work till the *Tree*, or piece of *Timber* be *bored* as far as you think convenient, and when you desire to enlarge the *hole*, change your *Auger Bits* as the *Figure* represents them.



To these we might add several more, as they are described by *Besson, Ramelli, Cause*, and others; as likewise *Cranes*, and *Machines* for the easier *Elevation, Moving, and Transporting of Timber*, but they are now become familiar, and therefore I omit them.

## C H A P. XXXI.

*Of Timber, the Seasoning and Uses, and of Fuel.*

Since it is certain and *Demonstrable*, that all *Arts and Artisans Seasoning*: whatsoever, must *fail and cease*, if there were no *Timber and Wood* in a *Nation* (for he that shall take his *Pen*, and begin to set down what *Art, Myserie, or Trade* belonging any way to *human life*, could be maintain'd and exercis'd without *Wood*, will quickly find that I speak no *Paradox*) I say, when this shall be well consider'd, it will appear, that we had better be without *Gold*, than without *Timber*: This contemplation, and the universal use of that precious *Material* (which yet is not of universal use 'till it be duly prepar'd) has mov'd me to design a solemn *Chapter* for the *seasoning*, as well as to mention some farther particular *Applications* of it. The first, and chiefeft use of *Timber* was doubtless for the building of *Houses*, and habitations to shelter *Men* in: It is in his 1. chap. 2. lib. where *Vitruvius* shews, in what simple, and plain manner, our first progenitors erected their humble *Cottages*; when like those of *Cholcos* and *Phrygia*, they began to creep out of the *subterranean*, and *Cavernous Rocks*, and laid the first *Groundsill* upon which they plac'd the upright posts, and rudely fram'd a pointed roof, *Arboribus perpetuis planis* (on which the *Critics* have vent their researches) and from which mean beginning, all all the superb, and pompous effects of *Architecture* have proceeded: But to pursue our *Title*, we have before spoken concerning some preparations of *standing Trees* design'd for *Timber*, by a half-cutting, disbarking, and the seasons of *drawing*, and *using* it.

2. Lay up your *Timber* very dry, in an airy place (yet out of the *Wind* or *Sun*) and not standing upright, but lying along one piece upon another, interposing some short *blocks* between them, to preserve them from a certain *mouldiness* which they usually contract while they *sweat*, and which frequently produces a kind of *fungus*, especially if there be any *sappy* parts remaining.

3. Some there are yet, who keep their *Timber* as moist as they can, by *submerging* it in *Water*, where they let it imbibe to hinder the *cleaving*; and this is good in *Fir*, both for the better *stripping* and *seasoning*; yea, and not only in *Fir*, but other *Timber*: lay therefore your *Boards* a *Fortnight* in the *Water*, and then setting them upright in the *Sun* and *Wind*, so as it may freely pass through them,



them, (especially during the heats of *Summer*, which is the time of finishing *Buildings*) turn them daily; and thus treated, even newly sawn *Boards*, will *Floor* far better than a many years dry *Seasoning*, as they call it. But to prevent all possible *accidents*, when you lay your *Floors*, let the *joynts* be *shot*, fitted, and tack'd down only for the *first year*, nailing them for good and all the *next*; and by this means they will lye *stanch*, close, and without *shrinking* in the least, as if it were all of one piece; and upon this occasion I am to add an *observation* which may prove of no small use to *Builders*; that if one take up *Deal-boards* that may have lain in the *floor* an *hundred years*, and shoot them again, they will certainly shrink (*toties quoties*) without the former method. Amongst *Wheel-Wrights* the *Water-seasoning* (which hinders the *exhaling* of the *Alcaly salt* in it, causing the hardness) is of especial regard, and in such esteem amongst some, that I am assur'd the *Venetians* for their Provision in the *Arsenal*, lay their *Oak* some years in it, before they employ it. Indeed the *Turks*, not only *Fell* at all times of the year, without any regard to the *season*; but employ their *Timber* green and unseason'd; so that though they have excellent *Oak*, it decays in a short time by this only neglect.

*Elm* fell'd never so *green* for suddain use, if plung'd *four*, or *five* days in *water* (especially *Salt*, which is best) obtains an admirable *seasoning*, and may immediately be us'd. Some again commend *buryings* in the *Earth*; others in *wheat*; and there be *seasonings* of the *fire*, as for the scorching and hardning of *Piles*, which are to stand either in the *water*, or the *earth*.

Explore, suspended in the Chimney smoke.

Et suspensa facis explore robora fumus.

Georg. 1.

For that to most *Timber* it contributes much to its duration. Thus do all the *Elements* contribute to the Art of *Seasoning*. The Learned *Interpreter* of *Antonio Neris* Art of *Glass* c. 5. speaking of the Difference of *Vegetables*, as they are made use of at various *seasons*, observes from the *Button-mould-makers* in those *woods* they use, that *Pear-trees* cut in *Summer* work toughest, but *Holly* in the *Winter*, *Box* hardest about *Easter*, but mellow in *Summer*, *Hawthorn* kindly about *October*, and *Service tree* in the *Summer*.

4. And yet even the greenest *Timber* is sometimes desirable for such as *Carve* and *Turn*; but it choaks the teeth of our *Saws*; and for *Doors*, *Windows*, *Floors*, and other close Works, it is altogether to be rejected; especially, where *Walnut-tree* is the *material*, which will be sure to shrink: Therefore it is best to choose such as is of *two*, or *three* years *seasoning*, and that is neither moist nor over-dry; the mean is best. Sir *Hugh Plat* informs us, that the *Venetians* use to burn, and scorch their *timber* in a flaming *fire*, continually turning it round with an *Engine*, till they have gotten upon it an hard, black, *Coaly* crust; and the Secret carries with it great probability; for that the Wood is brought by it to such a hardness and dryness, *ut cum omnis putrefactio incipiat ab humido*,

nor

nor *Earth*, nor *Water* can penetrate it; I my self remembring to have seen *Charcoals* dug out of the ground amongst the ruines of antient Buildings, which have in all probability, lain cover'd with earth above 1500 years.

5. *Timber* which is *cleft*, is nothing so obnoxious to *rift* and cleave as what is *hewen*; nor that which is *squar'd*, as what is *round*; and therefore where use is to be made of huge and massie *Columns*, let them be *boarded* through from end to end; it is an excellent preservative from splitting, and not *un-philosophical*; though to cure this accident, the rubbing them over with a *wax-cloth* is good, *Painters Putty*, &c. or before it be *converted*, the smearing the *timber* over with *Cow-dung*, which prevents the effects both of *Sun* and *Air* upon it; if of necessity it must lie expos'd: But besides the former remedies, I find *this*, for the closing of the chops and clefts of *Green Timber*, to anoint and supple it with the fat of *powder'd beef-broth*, with which it must be well soak'd, the *chasm's* fill'd with *sponges* dipt into it; *this*, to be twice done over: Some *Carpenters* make use of *grease* and *sawdust* mingled; but the first is so good a way (says my *Authour*) that I have seen *Wind-shock-timber* so exquisitely closed, as not to be discerned where the defects were: This must be us'd when the *Timber* is green.

6. We spake before of *Squaring*, and I would now recommend the *Quartering* of such *trees* as will allow useful and competent *Scantlings*, to be of much more durableness, and effect for strength, than where (as custom is, and for want of observation) whole *Beams* and *Timbers* are apply'd in *Ships* or *Houses*, with slab and all about them, upon false suppositions of strength beyond these *Quarters*: For there is in all *trees* an evident *Interstice* or separation between the *heart* and the rest of the *body*, which renders it much more obnoxious to decay and miscarry, than when they are treated, and *converted* as I have describ'd it; and it would likewise save a world of *Materials* in the *Building* of great *Ships*, where so much excellent *timber* is hew'd away to spoil, were it more in practice. Finally,

7. I must not omit to take notice of the *coating* of *timber* in *Work*, us'd by the *Hollanders* for the preservation of their *Gates*, *Port-cullis's*, *Draw-bridges*, *Sluces*, and other huge *beams* and *Contignations* of *timber* expos'd to the *Sun*, and perpetual injuries of the *Weather*, by a certain mixture of *Pitch* and *Tar*, upon which they strew small pieces of *Cockle*, and other *shells*, beaten almost to *powder*, and mingled with *Sea-sand*, or the *Scales* of *Iron*, beaten small and sifted, which *incrusters*, and arms it after an incredible manner against all these assaults and foreign invaders: But if this should be deem'd more obnoxious to *Firing*, I have heard that a *Wash* made of *Alum*, has wonderfully protected it against the assaults even of that devouring *Element*, and that so a *wooden Tower* or *Fort* at the *Piræum* an *Athenian Port*, was defended by *Archelaus* a Commander of *Mithridates*, from the great *Sylla*; But you have several *Compositions* for this purpose in that incomparable

parable Treatise of Naval Architecture, written in the *Low-Dutch* by N. Witsen chap. 6. part 1. the Book is a *Folio*, and he that should well translate it into our *Language* (which I much wonder has not yet been done) would deserve well of the publick.

8. Timber that you have occasion to lay in Morter, or which is in any part contiguous to Lime, as Doors, Window Cases, Groundsills, and the extremities of Beams, &c. should be cap'd with molten Pitch, which will be a marvellous preserver of it from the burning, and destructive effects of the Lime; and in defect of Pitch, Loam, or Clay will prove a tolerable defence: But though Lime be so destructive whilst Timber lies thus dry, it seems they mingle it with Hair, to keep the Worm out of Ships which they sheath for Southern voyages; though it is held much to retard their course: wherefore the Portugals scorch them with fire, which often proves very dangerous, and indeed their Timber being harder, is not so easily penetrable; and therefore have some been thinking of sending out some tougher sorts of Material, especially of a bitter sap; such as is reported to be the wood of a certain Indian-pear: and some talk of a Lixivium to do the feat; others of a pitchy substance to be extracted out of Sea-coal; but nothing has yet been found more expedient, than the late application of thin lamins of sheet Lead, if that also be no impediment to their sailing: However, there are many kind of woods in the Western-Indies (besides the Acajou) that breeds no Worms, and such is the white wood of Jamaica proper enough to build Ships.

9. For all uses, that Timber is esteem'd the best, which is the most ponderous, and which lying long makes deepest impression in the Earth, or in the Water being floated; also what is without knots, yet firm, and free from sap; which is that fatty, whiter, and softer part, call'd by the Antients *Alburnum*, which you are diligently to hew away; here we have much ado about the *Torulus* of the Fir, and the Φλοιώδης κύλινδρος by both Vitruvius and Theophrastus, which I pass over. You shall perceive some which has a spiral convolution of the veins; but it is a vice proceeding from the severity of unseasonable Winters, and defect of good nutriment.

10. My Lord Bacon Exp. 658. recommends for tryal of a sound or knotty piece of Timber, to cause one to speak at one of the Extremities to his Companion listening at the other; for if it be knotty, the sound (says he) will come abrupt.

11. Moreover, it is expedient that you know which is the Grain, and which are the Veins in Timber (whence the term *fluviari arborem*) because of the difficulty of working against it: Those therefore are counted the veins which grow largest, and are softer for the benefit of Cleaving, and Hewing; that the Grain or Pectines, which runs in waves, and makes the divers and beautiful chamfers which some woods abound in to admiration. The Fir-tree Horizontally cut, has two Circles of different Fibers, which (when the Timber comes to be cleft in the middle) separates into four different Waves, whence Pliny calls them *quadrifluvios*, and it is to be



be noted, that the *nodous*, and knotty part of these sort of Trees, is that only which grows from the first *Boughs* to the *summit* or Top, by *Vitruvius* term'd the *Fusterna*, which both *Baldus*, and *Salmasius* derive à *Fuste*. The other *clean* part, free of these *boils*, (being that which when the sappy *slab* is cut away, is the best) he calls *Sapiena*. Finally, The *Grain* of *Beech* runs two contrary ways, and is therefore to be wrought accordingly; and indeed the *grain* of all *Timber* ought well to be observ'd; since the more you work according to it, especially in *cleaving*, and the less you *saw*, the stronger will be your work.

12. Here it may be fitly enquir'd, whether of all the sorts we have enumerated, the *old*, or the *younger* Trees do yield the fairest *Colour*, pleasant *Grain* and *Gloss* for *Wainscot*, *Cabinets*, *Boxes*, *Gun-stocks*, &c. and what kind of *Pear*, and *Plum-tree* give the deepest *Red*, and approaches nearest in beauty to *Brasil*: 'Tis affirm'd the *old Oak*, *old Walnut*, and *young Ash*, are best for most *uses*; and yet for *Ship-Carpentry* this does not always hold; nor does the bigness of it so much recommend it; because 'tis commonly a sign of *age*, which (like to very *old men*) is often brittle and effete. *Black* and *thorny Plum-tree* is of the deepest *Oriency*; but whether these belong to the *Forest*, I am not yet satisfied, and therefore have assign'd them no *Chapter* apart. But now I speak of the *Plum-tree*, I am assur'd by a worthy *Friend*, that the *Gum* thereof dissolv'd in *Vinegar*, does cure the most contumacious *Tettors*, when all other remedies outward or inwardly applied, nothing avail'd.

13. Lastly, I would also add something concerning what *Woods* are observed to be most *sonorous* for *Musical Instruments*: We as yet detect few but the *German Aer* which is a *species* of *Maple*, for the *Rimms* of *Viols*, and the choicest, and finest grain'd *Fir* for the *Bellies*: The *finger-boards*, *Back*, and *Ribs*, I have seen of *Tew*, *Pear-tree*, &c. But *Pipes*, *Recorders*, and *wind-Instruments*, are made both of hard, and soft *woods*; I had lately an *Organ* with a set of *Oaken-pipes*, which were the most *sweet* and *mellow* that were ever heard; It was a very old *Instrument*, and formerly, I think, belonging to the *Duke of Norfolk*.

14. For the *place* of growth, that *Timber* is esteem'd best which grows most in the *sun*, and on a dry and hale ground; for those *trees* which *suck*, and *drink* little, are most hard, robust, and longest liv'd, instances of *Sobriety*. The *Climate* contributes much to its *quality*, and the *Northern* situation is preferred to the rest of the *quarters*; so as that which grew in *Tuscany* was of old thought better, than that of the *Venetian* side; and yet the *Biscay Timber*, is esteem'd better than what they have from *colder Countries*: and *trees* of the *wilder kind*, and *barren*, than the over much cultivated, and great bearers: but of this already.

15. To omit nothing, *Authors* have sum'd up the *natures* of *timber*; as the hardest *Ebeny*, *Box*, *Larch*, *Lotus*, *Terebinth*, *Cornus*, *Tew*, &c. and though these *indurated* woods be too ponderous for *Ship-carpentry*; yet there have been *Vessells* built of it,

by the *Portugals* in *America*; in which the *Planks*, and innermost *Timbers* had been saw'd very thin for lightness sake; and the *knee-timber* put together of divers small pieces, by reason of the inflexibleness of it, both which could not but render the *ships* very weak: In the mean time, the perfection of these hard materials consists much in their receiving the most exquisite politure; and for this, *Lin-seed*, or the sweeter *Nut-oyl* does the effect best: *Pliny* gives us the Receipt, with a decoction of *Walnut-shales*, and certain wild pears: Next to these, *Oak*, for *ships*, and *Houses* (or more minutely) the *Oak* for the *Keel*, the *Robur* for the *Prow*, *Walnut* the *Stern*, *Elm* the *Pump*; *Furnerus* l. 1. c. 22. conceives the *Ark* to have been built of several woods; *Cornel*, *Holly*, &c. for *Pins*, *Wedges*, &c. *Chestnut*, *Horn-beam*, *Poplar*, &c. Then for *Bucklers*, and *Targets*, were commended the more soft and moist; because apt to close, swell, and make up their wounds again; such as *Willow*, *Lime*, *Birch*, *Alder*, *Elder*, *Ash*, *Poplar*, &c.

The *Robur*, or *Wild Oak* Timber, best to stand in ground; the *Quercus* without; and our *English*, for being least obnoxious to *Splinter*, and the *Irish* for resisting the *Worm* (tough as leather) are doubtless for *Shipping* to be prefer'd before all other: The *Cypress*, *Fir*, *Pines*, *Cedar*, &c. are best for *Posts*, and *Columns*, because of their erect growth, natural and comely diminutions. Then again it is noted, that *Oriental Trees* are hardest towards the *Cortex* or *Bark*; our *Western* towards the middle, which we call the *Heart*; and that *Trees* which bear fruit, or but little, are more durable than the more pregnant. It is noted of *Oak*, that the knots of an inveterate *Tree*, just where a lusty arm joyns to the *Stem*, is as curiously vein'd as the *Walnut*, which omitted in the *Chapter* of the *Oak*, I here observe. The *Palmeto* growing to that prodigious height in the *Barbadoes*, and whose top bears an excellently tasted *Cabbage*, grows so wonderfully hard, that an *Edge-Tool* will scarce be forced into it.

*Pines*, *Pitch*, *Alder*, and *Elm*, are excellent to make *Pumps* and *Conduit-pipes*, and for all *Water-works*, &c. *Fir* for *Beams*, *Bolts*, *Bars*; being tough, and not so apt to break as the hardest *Oak*: In sum, the more odoriferous *Trees* are the more durable and lasting; and yet I conceive that well season'd *Oak* may contend with any of them; especially, if either preserved under ground, or kept perfectly dry: In the mean time, as to its application in *Shipping*, the best of it ought to be employ'd for the *Keel*, (that is, within, else *Elm* exceeds) the main *beams* and *rafters*, whilst for the ornamental parts, much slighter *Timber* serves: One note more is requisite, namely, that great care be had to make the *Trundels* of the best, toughest, and sincerest part, many a *Vessel* having been lost upon this account; and therefore dry, and young *Timber* is to be prefer'd for this, and for which the *Hollanders* are plentifully furnish'd out of *Ireland*, as *Nicholas Witsen* has himself acknowledged.

16. Here farther for the uses of timber, I will observe to our Reader some other Particulars for direction both of the Seller and Buyer,

*Buyer*, applicable to the several *Species*: And first of the two sorts of *Lathes* allow'd by Statute, one of *five*, the other of *four foot* long, because of the different Intervals of *Rafters*: That of *five* has 100 to the *Bundle*, those of *four* 120; and to be in *breadth* 1 *Inch* and  $\frac{1}{2}$ , and half *Inch* thick; of either of which sorts there are three, viz. *Heart-oak*, *Sap-Lathes*, and *Deal Lathes*, which also differ in *Price*: The *Heart-oak* are fittest to lie under *tyling*, the second sort, for *plastering* of *side-walls*, and the third for *Ceilings*, because they are streight and even.

17. Here we will gratifie our curious *Reader* with as curious an *Account* of the *Comparative strength*, and *fortitude* of the several usual sorts of *timber*, as upon *Suggestions* previous to this *Work*, it was several times *Experimented* by the *Royal Society*, though omitted in the first *Impression*, because the *tryals* were not complete as they now thus stand in our *Register*.

March 23. 1663.

The *Experiment* of breaking several sorts of *Wood* was begun to be made: And there were taken three pieces of several kinds; of *Fir*, *Oak*, and *Ash*, each an *Inch* thick, and two *foot* long, the *Fir* weigh'd 8  $\frac{1}{2}$  *Ounces*, and was broken with 200 *l.* weight: The *Oak* weigh'd 12  $\frac{1}{2}$ , broken with 250 weight: the *Ash* weigh'd 10  $\frac{1}{2}$ , broken with 325 weight.

Besides there were taken 3 pieces of the same sorts of *wood* each of  $\frac{1}{2}$  *inch* thick, and 1 *foot* long: the *Fir* weigh'd  $\frac{1}{2}$ , and was broken with  $\frac{1}{2}$  of an 100: The *Oak* weigh'd  $\frac{1}{2}$  broken with  $\frac{1}{2}$  of an 100: the *Ash* weigh'd  $\frac{1}{2}$  broken with 100 *l.*

Again, there was a piece of *Fir*  $\frac{1}{2}$  *Inch* square, and two *foot* long, broken with 33 *l.* A piece of  $\frac{1}{2}$  *Inch* thick, 1 *Inch* broad, and 7 *foot* long, broken with 100 weight *edge-wise*: And a piece of  $\frac{1}{2}$  *inch* thick,  $\frac{1}{2}$  broad, 2 *foot* long, broken with 225 weight, also *edge-wise*.

The *Experiment* was order'd to be repeated by the *President*, to Sir *William Petty*, and Mr. *Hook*; and it was suggested by some of the *Company*, that in these *tryals* consideration might be had of the *age*, *knottiness*, *solidity*, several *Soils*, and *parts* of *trees*, &c. and Sir *Robert Morray* did particularly add, that it might be observ'd how far any kind of *Wood* bends before it breaks.

March — 64.

The *Operator* gave an *Accompt* of more pieces of *wood* broken by weight, viz. a piece of *Fir* 4 *foot* long 2 *Inches*, 53 *Ounce* weight, broken with 800 *l.* weight, and very little bending, with 750; by which the *Hypothesis* seems to be confirm'd, that in similar pieces, the *Proportion* of the *breaking-weight* is according to the *basis* of the *wood broken*: Secondly, of a piece of *Fir* 2 *foot* long, 1 *Inch* square, cut away from the middle both ways to half an *Inch*, which supported 250 *l.* weight before it broke, which is

D d 2

more



more by 50 l. than a piece of the same *thickness* every way was formerly broken with; the difference was guessed to proceed from the more firmness of this other piece.

His Lordship the President, was desired to contribute to the Prosecution of this Experiment, and particularly, to consider what *line* a Beam must be cut in, and how *thick* it ought to be at the *Extreams*, to be equally strong: Which was brought in April 13, but I find it not enter'd.

April 20. 1664.

The Experiment of breaking Wood was prosecuted, and there were taken two pieces of Fir, each two foot long, and 1 Inch square, which were broken, the one long-ways with 300 l. weight, the other transverse-ways with 2 hundred: Secondly, two pieces of the same wood, each of  $\frac{1}{2}$  of an Inch square, and two foot long, broken, the one long-ways with 1 hundred; the other transverse with 100 l. weight: Thirdly, one piece of 2 foot long  $\frac{1}{2}$  Inch square, broken long-ways with 81 l. Fourthly, one piece cut out of a crooked Oaken-billet, with an arching Grain, about  $\frac{1}{2}$  Inch square, two foot long, broken with 2 hundred.

June 29. 1664.

There were made several Experiments more of breaking wood: First, a piece of Fir  $\frac{1}{2}$  Inch diameter, and 3 Inches long, at which distance the weight hung, broke in the Plane of the Grain horizontally, with 66 l. whereof 15 l. Troy; Vertically, with 2 l. more. Also Fir of a  $\frac{1}{2}$  Inch diameter, and 1 Inch long, broke vertically with 20 l. and horizontally, with 19 l. Elm of  $\frac{1}{2}$  Inch diameter, and three Inches long, broke horizontally, with 47 l. Vertically with 23 l. Elm of  $\frac{1}{2}$  Inch diameter, and 1 Inch long, broke horizontally with 12 l. Vertically with 10 l. which is Note worthy.

July 6. 1664.

The Experiment of breaking Woods prosecuted: A piece of Oak of  $\frac{1}{2}$  Inch diameter and three Inches long, at which distance the weight hung, broke horizontally with 48 l. Vertically with 40 l. Ash of  $\frac{1}{2}$  Inch diameter, and 3 Inch long, horizontally with 77 l. Vertically, with 75 l. Ash of  $\frac{1}{2}$  Inch diameter, and 1 Inch long, horizontally with 19 l. Vertically, with 12 l. &c. Thus far the Register. In the mean time I learn that in the Mines of Mendip pieces of Timber of but the thickness of a mans arm, will support 10 Tun of Earth; and that some of it has lain 200 years, which is yet as firm as ever, growing tough and black, and being expos'd two or three days to the Wind and Sun, scarce yields to the Ax.

18. Here might come in the Problems of Cardinal Cusa in Lib. 4. *Idiotæ dial.* 4<sup>th</sup> concerning the different velocity of the Ascent of great pieces of Timber, before the smaller, submerged in water; as also

also of the *weight*; as v. g. Why a piece of *Wood* 100 *L* weight, poising more in the *Air* than 2 *l*. of *Lead*, the 2 *l*. of *Lead* should seem to *weigh* (he should say *sink*) more in the *Water*? Why *Fruits* being cut off from the *Tree*, weigh *heavier*, than when they were *growing*? with several the like *Paradoxes*, haply more *curious* than *useful*, and therefore we purposely omit them; but so may we not the recommendation of that useful *Treatise* of *Duplicate proportion*, together with a new *Hypothesis* of *Elastique* or springy bodies, to shew the strengths of *Timbers*, and other *homogeneous* materials apply'd to *Buildings*, *Machines*, &c. as it is publish'd by that admirable *Genius*, the learned Sir *William Petty*. To which we joyn that part of Dr. *Grews* comparative *Anatomy* of *Trunks*, as variously fitted for *Mechanical* uses; where that most industrious and curious searcher into nature, describes to us whence *Woods* are *soft*, *fast*, *hard*, apt to be *cleft*, *tough*, *durable*, &c. Lastly,

19. Concerning *Squar'd*, and *Principal Timber* for any usual *Building*, these are the legal *Proportions*, and which *Buildings* ought not to vary from.

Summers or Gir- ders from	{ F. R. 14 16 18 to 20 20 23 23 26 26 28 }	In length, must be in their Square.	{ In. In. 11 8 13 & 9 14 10 16 12 17 14 }	Joists of	{ Feet 11½ 10½ Square	In length must be in their Square	{ Inch Inch 8 3 7 & 3 6 3 }

Binding Joists & ming from	{ F. F. 7 to 11½ Square	In length must be in their Square	{ 6 5 7 & 5 8 5 }	Wall-plates and Beams of any length, from 5 foot, may have in their Square	{ Inch Inch 15 7 10 & 6 8 4 }

Purlines from	{ F. F. 15 to 18½ 18½ 21½ Square	In length, must have in their Square	{ 9—8 & 12—9 }

Principal Rafters or Taper from	{ F. F. 12½—14½ 14½—18½ 18½ to 21½ 21½—24½ 24½—26½ }	In length must have in their Square on one side	{ In. In. 8 5 9 7 10 to 8 12 9 9 9 }	on the other side	{ single 6 7 8 8 9 9½ }	Rafters in length from 6½ to 9½	{ F. must 6½ have 0 in 9 in 9½ their Square	{ 5—3½ & 5—4 }

Principal Dischargers of any length from	{ Foot 10 upward }	must have in their Square	{ Inch Inch 13—12 16—13 }

But *Carpenters* also work by *Square*, which is 10 *foot* in *Framing* and Erecting the *Carcase* (as they call it) of any *Timber* Edifice, which is valued according to the goodness and choice of the *Materials*, and curiosity in *Framing*; especially *Roofs* and *Staircases*, which are of most charges. And here might also something be added concerning the manner of *framing* the *Carcases* of *Buildings*, as of *Floors*, *pitch* of *Roofs*, the length of *Hips*, and *Sleepers*, together with the names of all those several *Timbers* used in *Fabrics* totally consisting of *Wood*; but I find it done to my hand,

hand, and Publish'd some years since, at the end of a late Translation of the *first Book of Palladio*, to which I refer the Reader. And to accomplish out *Artist in Timber*, with the utmost which that *material* is capable of; to the Study and Contemplation of that stupendious *Roof*, which now lies over the ever renowned *Sheldonean Theatre* at the *University of Oxford*; being the sole Work and Contrivement of that my most Honoured Friend Sir *Chr. Wren*, now worthily dignified with the *Superintendency* of his *Majesties Buildings*. See Dr. *Plots* description of it in his *Nat. Hist. of Oxfordshire*, p. 272, 273. Tab. 13, 14. also D. *Wallis de Motu* part 3. de *veſte* cap. 6. prop. 10.

20. We did, in *Chap. 21*. mention certain *Subterranean Trees*, which Mr. *Cambden* supposes grew altogether under the ground: And truly, it did appear a very *Paradox* to me, till I both saw, and diligently examin'd that piece (*Plank, Stone*, or both shall I name it) of *Lignum fossilis* taken out of a certain *Quarry* thereof at *Aqua Sparta* not far from *Rome*, and sent to the most incomparably learned Sir *George Ent*, by that obliging *Virtuoso Cavalier dal Pozzo*. He that shall examine the *hardness*, and feel the *ponderousness* of it, sinking in *water*, &c. will easily take it for a *stone*; but he that shall behold its *grain*, so exquisitely *undulated*, and varied, together with its *colour*, manner of *hewing*, *chips*, and other most perfect resemblances, will never scruple to pronounce it arrant *wood*.

*Signor Stelluti* (an *Italian*) has publish'd a whole *Treatise* expressly to describe this great *Curiosity*: And there has been brought to our notice, a certain *relation* of an *Elm* growing in *Barkshire* near *Farringdon*, which being cut towards the *Root*, was there plainly *Petrified*; the like, as I once myself remember to have seen in another *Tree*, which grew quite through a *Rock* near the *Sepulchre* of *Agrippina* (the *Mother* of that *Monster Nero*) at the *Bai* by *Naples*, which appear'd to be all *Stone*, and trickling down in drops of *Water*, if I forget not. But, while others have *Philosophiz'd* according to their manner upon these extraordinary *Concretions*; see what the most industrious, and knowing Mr. *Hook*, *Curator* of this *Royal Society*, has with no less *Reason*, but more *succinctness*, observ'd from a late *Microscopical* Examen of another piece of *petrified wood*; the Description, and Ingenuity whereof cannot but gratify the *Curious*, who will by this *Instance*, not only be instructed how to make *Inquiries* upon the like occasions; but see also with what *accurateness* the *Society* constantly proceeds in all their *Indagations*, and *Experiments*; and with what *Candor* they relate, and communicate them.

21. "It resembled *wood*, in that

"First, all the parts of the *petrifi'd* substance seem'd not at all  
"dislocated, or alter'd from their natural position while they were  
"*wood*; but the whole piece retain'd the exact shape of *wood*, ha-  
"ving many of the conspicuous *pores* of *wood* still remaining  
"*pores*, and shewing a manifest difference visible enough between  
"the *grain* of the *wood* and that of the *bark*; especially, when a-  
"ny side of it was cut smooth and polite; for then it appeared  
"to



“to have a very lovely *grain*, like that of some curious close  
“*wood*.

“Next (it resembled *wood*) in that all the smaller, and (if so I  
“may call those which are only to be seen by a good glass) *mi-*  
“*croscopical* pores of it, appear (both when the substance is cut and  
“polish’d *transversely*, and *parallel* to the pores) perfectly like the  
“*Microscopical* pores of several kinds of *wood*, retaining both the  
“*shape*, and *position* of such pores.

“It was differing from *wood*,

“First, in *weight*, being to common *water*, as 3: to 1. whereas  
“there are few of our *English* woods that, when dry, are found to  
“be full as heavy as *water*.

“Secondly, in *hardness*, being very near as hard as a *flint*, and  
“in some places of it also resembling the grain of a *flint*: it would  
“very readily cut *Glass*, and would not without difficulty (espe-  
“cially in some parts of it) be scratch’d by a black hard *flint*: it  
“would also as readily strike *fire* against a *Steel*, as also against a  
“*flint*.

“Thirdly, in the *closeness* of it; for, though all the *microscopical*  
“pores of the *wood* were very conspicuous in one position,  
“yet by altering that position of the polish’d surface to the light, it  
“also was manifest that those pores appear’d darker than the rest of  
“the body, only because they were fill’d up with a more dusky sub-  
“stance, and not because they were hollow.

“Fourthly, in that it would not *burn* in the *fire*; nay, though I  
“kept it a good while red-hot in the flame of a *Lamp*, very in-  
“tensely cast on it by a *blast* through a small *pipe*; yet it seem’d not  
“at all to have diminish’d its extension; but only I found it to have  
“chang’d its colour, and to have put on a more dark, and dusky  
“brown hue. Nor could I perceive that those parts which seem’d  
“to have been *wood* at first, were any thing wasted, but the parts  
“appear’d as solid, and close as before. It was farther observable  
“also, that as it did not consume like *wood*; so neither did it crack  
“and fly like a *flint*, or such like hard *stone*; nor was it long before  
“it appeared red-hot.

“Fifthly, in its *dissolubleness*; for putting some drops of *distilled*  
“*Vinegar* upon the *stone*, I found it presently to yield very many  
“*bubbles*, just like those which may be observed in *spirit* of *Vine-*  
“*gar* when it corrodes *Coral*; though I guess many of those *bub-*  
“*bles* proceeded from the small parcels of *Air*, which were driven  
“out of the pores of this *petrifi’d* substance, by the insinuating li-  
“quid *menstruum*.

“Sixthly, in its *Rigidity*, and *friability*; being not at all *flexi-*  
“*ble*, but *brittle* like a *flint*; insomuch that with one knock of a  
“*Hammer* I broke off a small piece of it, and with the same *Ham-*  
“*mer* quickly beat it to pretty fine *powder* upon an *Anvil*.

“Seventhly, it seem’d also very differing from *wood* to the touch,  
“feeling more cold than *wood* usually does, and much like other  
“close *Stones* and *Minerals*.

“The *Reasons* of all which *Phænomena* seem to be:

“That

"That this petrified wood having lain in some place where it was well soaked with petrifying water (that is, such a water as is well impregnated with stony and earthy particles) did by degrees separate, by straining and filtration, or perhaps by precipitation, co-hesion or coagulation, abundance of stony particles from that permeating water; which stony particles having, by means of the fluid Vehicle, convey'd themselves not only into the microscopical pores, and perfectly stop'd up them; but also into the pores, which may perhaps be even in that part of the wood which through the microscope appears most solid; do thereby so augment the weight of the wood, as to make it above three times heavier than water, and perhaps six times as heavy as it was when wood: next, they hereby so lock up and fetter the parts of the wood, that the fire cannot easily make them fly away, but the action of the fire upon them is only able to char those parts as it were, like as a piece of wood if it be closed very fast up in clay, and kept a good while red hot in the fire, will by the heat of the fire be char'd, and not consum'd; which may perhaps be the reason why the petrifi'd substance appear'd of a blackish brown colour after it had been burnt. By this intrusion of the petrifi'd particles it also becomes hard, and friable; for the smaller pores of the wood being perfectly stuffed up with these stony particles, the particles of the wood have few, or no pores in which they can reside, and consequently, no flexion or yielding can be caus'd in such a substance. The remaining particles likewise of the wood among the stony particles may keep them from cracking and flying, as they do in a flint.

22. The casual finding of Subterraneous-Trees has been the occasion of this curious Digression: Now it were a strange Paradox to affirm, that the Timber under the ground, should to a great degree, equal the value of that which grows above the Ground; seeing though it be far less, yet it is far Richer; the Roots of the vilest Shrub, being better for its toughness, and for Ornament, and delicate uses much more preferable than the Heart of the fairest and soundest Tree: And many Hills, and other waste-places, that have in late and former Ages been stately Groves and Woods, have yet this Treasure remaining, and perchance sound and unperish'd, and commonly (as we observ'd) an hindrance to other Plantations; Engines therefore, and Expedients for the more easily extracting these Cumbrances, and making riddance upon such Occasions, besides those we have produc'd, would be excited, and enquir'd after, for the dispatch of this difficult Work.

Fuel.

23. Finally, for the use of our Chimnies, and maintenance of fire, the plenty of wood for fuel, rather than the quality is to be looked after; and yet there are some greatly to be preferr'd before others, as harder, longer-lasting, better heating, and chearfully burning; for which we have commended the Ash, &c. in the foregoing Paragraphs, and to which I pretend not here to add much, for the avoiding repetitions; though even an History of the best way of Charring would not mis-become this Discourse.

But something more is to be said sure, concerning the selling of  
Fuel.

*Fuel-wood* : Note therefore, that you first begin with the *under-wood* : Some conceive between *Martle-mas* and *Holy-Rood* ; but, generally with *Oaks* as soon as 'twill strip, but not after *May* ; and for *Ashes*, 'twixt *Michael-mas* and *Candlemas-mas* ; and so fell'd, as that the *Cattel* may have the *browsing* of it, for in *Winter* they will not only eat the tender *twigs*, but even the very *Moss* ; but fell no more in a day than they can Eat for this purpose : This done, *kid* or *bavin* them, and pitch them upon their ends to preserve them from rotting : Thus the *Under-wood* being dispos'd of, the rest will prosper the better, and besides it otherwse does but rot upon the Earth, and destroy that which would spring. If you *head*, or *top* for the *fire*, 'tis not amiss to begin three or four foot above the *Timber*, if it be considerable ; but in case they are only *shaken-Trees* and *Hedge-rows*, strip them even to *thirty* foot high, because they are usually full of *boughs* ; and 'twere good to *top* such as you perceive to wither at the *tops* a competent way beneath, to prevent their sickness downwards, which will else certainly ensue ; whereas by this means even *dying Trees* may be preserved many years to good emolument, though they never advance *taller* ; and being thus frequently shred, they will produce more, than if suffered to stand and decay : This is a profitable *note* for such as have old, doating, or any ways infirm *Woods* : In other *Fellings*, some advise never to commence the disbranching from the *top*, for though the incumbency of the very *boughs* upon the *next*, cause them to fall off the easier, yet it endangers the splicing of the *next*, which is very prejudicial, and therefore advise the beginning at the nearest. And in *Cutting* for *fuel* you may as at the *top*, so at the *sides*, cut a *foot*, or more from the *Body* ; but never when you shred *Timber-Trees* : We have said how dangerous it is, to cut for *fire-wood* when the *sap* is up, it is a mark of improvident *Husbands* ; besides it will never burn well, though abundance be congested : Lastly, remember that *East* and *North-winds* are unkind to the succeeding Shoots. Now for directions in *Stacking* (of which we have said something in *Chap. of Copp'ces*) ever set the *lowest* course an *end*, the *second* that on the *sides* and *ends*, *viz.* *sides* and *ends* outward ; the *third* thwart the other on the *side*, and so the rest, till all are placed, spending the up-most first.

Thus we have endeavoured to prescribe the best directions we could learn concerning this necessary Subject. And in this penury of that dear Commodity, and to incite all ingenious persons, studious of the benefit of their *Country*, to think of ways how our *Woods* may be preserved, by all manner of *Arts* which may prolong the lasting of our *fuel*, I would give the best encouragements. Those that shall seriously consider the intolerable misery of the poor *Cauchi* (the then Inhabitants of the *Low-Countries*) describ'd by *Pliny*, *lib. 16. cap. 1.* (how opulent soever their late *Industry* has render'd them) for want only of *wood* for *fuel*, will have reason to deplore the excessive decay of our former store of that useful Commodity ; and by what shifts our Neighbours the *Hollanders*, do yet repair that defect, be invited to exercise their ingenuity :



For besides the *Dung* of *Beasts*, and the *Peat* and *Turf* for their *Chimneys*, *Cow sheards*, &c. they make use of *Stoves* both portable and standing; and truly the more frequent use of those *Inventions* in our great, wasting *Cities* (as the Custom is through all *Germany*) as also of those new, and excellent *Ovens* invented by *Dr. Kessler*, for the incomparably baking of *Bread*, &c. would be an extraordinary expedient of husbanding our *fuel*; as well as the right mingling, and making up of *Char-coal-dust*, and *loam*, as 'tis hinted to us by *Sir Hugh Plat*, and is generally us'd in *Maestricht*, *Liege* and the Country about it; than which there is not a more sweet, lasting, and beautiful *fuel*; The manner of it is thus:

24. Take about one *third part* of the smallest of any *Coal*, *Pit*, *Sea*, or *Char-coal*, and commix them very well with *loam* (whereof there is in some places to be found a sort somewhat more combustible) make these up into *balls* (moistned with a little *Urine* of *Man* or *Beast*) as big as an ordinary *Goose-egge*, or somewhat bigger; or if you will in any other form, like *brick-bats*, &c. expose these in the *Air* till they are thoroughly dry; they will be built into the most orderly *fires* you can imagine, *burn* very clear, give a wonderful heat, and continue a very long time. But first you must make the *fire* of *Char-coal*, or *Small-coal*, covering them with your *Eggs*, *Hotshots* or *Hovilles* (as they are call'd) and building them up in *Pyramids*, or what shape you please, they will continue a glowing, solemn and constant *fire* for seven or eight *hours* without being stirred, and then they encourage and recruit the innermost with a few fresh *Eggs*, and turn the rest, which are yet quite reduc'd to *Cinders*; and this mixture is devis'd to slacken the impetuous devouring of the *fire* and to keep the *Coals* from consuming too fast.

Two or three short *Billets* cover'd with *Char-coal* last much longer, and with more life, than twice the quantity by it self, whether *Char-coal alone*, or *Billet*; and the *Billets* under the *Charcoal* being undisturb'd, will melt as it were into *Char-coals* of such a lasting size.

If *Small-coals* be spread over the *Char-coal*, where you burn it alone, 'twill bind it to longer continuance; and yet more, if the *Small-coal* be made of the roots of *Thorns*, *Briers*, and *Brambles*. Consult *L. Bacon*, *Exp.* 775.

25. The *Quercus Marina*, *Wrack*, or *Sea-weed* which comes in our *Oyster-barrels*, laid under *New-Castle-coal* to kindle it (as the use is in some places) will (as I am inform'd) make it out-last two great *fires* of simple *Coals*, and maintain a glowing *luculent* heat without waste. This sort of *Fuel* is much made use of in *Malta* and the *Islands* thereabout, especially to burn in their *Ovens*, and the *Peasant* who first brought it into custom I find highly commended by an *Author* as a great *Benefactor* to his Country: The manner of gathering it is to cut it in *Summer* time from the *Rocks* whereon it grows abundantly, and bringing it in *Boats* or otherwise to Land, spread and dry it in the *Sun* like *hay*, turning and cocking it till it be fully cured: It makes an excellent *fire* alone, and *roasts* to admiration; and when all is burnt, the *Ashes* are one of the best *manures* for Land in the world, for the time it continues its

vertue,

vertue, which should be frequently supplied with fresh; and as to the *Fire* mingled with other *Combustibles*, it is evident that it adds much life, continuance and aid, to our fullen *Sea-coal Fuel*; and if the main *Ocean* should afford *Fuel* (as the *Bernacles* and *Soland-Geese* are said to do in some parts of *Scotland* with the very *sticks* of their *Nests*) we in these *Isles* may thank our selves if we be not warm: These few particulars I have but mention'd to animate *Improvements*, and ingenious Attempts of detecting more cheap, and useful *processes*, for ways of *Charing-Coals*, *Peat*, and the like *fuliginous* materials; as the accomplish'd Mr. *Boyl* has intimated to us in the *Fifth* of those his precious *Essays* concerning the *usefulness* of *Natural Philosophy*, *Part 2. cap. 7. &c.* to which I refer the Curious.

26. By the *Preamble* of the *Statute 7 Ed. 6.* one may perceive (the *Measures* compar'd) how plentiful *fuel* was in the time of *Ed.* the 4<sup>th</sup>, to what it was in the *Reigns* of his *Successors*: This suggested a review of *Sizes*, and a reformation of *Abuses*; in which it was *Enacted*, that every *Sack* of *Coals* should contain *four Bushels*; Every *Taleshide* to be four *foot* long, besides the *carf*; and if nam'd of *one*, marked *one*, to contain 16 inches *circumference*, within a foot of the middle; If of two marks, 23 inches; of 3. 28; of 4. 35; of 5. 38. inches *about*, and so proportionably.

27. *Billets* were to be of three foot, and four inches in length: the single to be 17 inches and an half about; and every *Billet* of one *cast* (as they term the mark) to be ten inches about: of two cast, fourteen inches, and to be marked (unless for the private use of the *Owner*) within six inches of the middle: of one *cast* within four inches of the end, &c.

Every bound *Fagot* should be three foot long; the *band* twenty four inches *circumference*, besides the knot.

In the 43 *Eliz.* the same *Statute* (which before only concern'd *London* and its *Suburbs*) was made more universal; and that of *Ed.* 6. explain'd with this addition: For such *Taleshides* as were of necessity to be made of *cleft-wood*, if of *one* mark, and half round, to be 19 inches about; if quarter-cleft 18 inches: Marked *two*, being round it shall be 23 inches compass: half-round 27: quarter-cleft 26: marked *three*, round 28: half-round 33: quarter-cleft 32: marked *four*, being round 33 inches about: half-round 39: quarter-cleft 38: marked *five* round, 38 inches about: half-round 44: quarter-cleft 43: the measure to be taken within half a foot of the middle of the length mention'd in the former *Statute*.

Then for the *Billet*, every one nam'd a *single*, being round, to have 7 inches *circumference*; but no *single* to be made of cleft wood: If marked *one*, and round, to contain 11 inches compass: if half-round 13: quarter-cleft 12.

If marked *two*, being round, to contain 16 inches: half-round 19: quarter-cleft 18: the length as in the *Statute* of King *Edward 6.*

28. *Fagots* to be every stick of three foot in length, excepting  
E e 2 only

only one stick of one foot long, to harden and wedge the binding of it: This, to prevent the abuse (too much practis'd) of filling the middle part, and ends with trash, and short sticks, which had been omitted in the former *Statute*: concerning *the* and of the *dimensions* of wood in the *Stack*, see Chap. 28. to direct the less instructed *Purchaser*: and I have been the more particular upon this occasion; because, than our *Fuel* bought in *Billet* by the *Notch* (as they call it in *London*) there is nothing more deceitful; for by the vile iniquity of some *Wretches*, marking the *billets* as they come to the *Wharf*, Gentlemen are egregiously cheated. I could produce an instance of a *Friend* of mine (and a *Member* of this *Society*) for which the *Wood-monger* has little cause to brag; since he never durst come at him, or challenge his *Money* for the *Commodity* he bought; because he durst not stand to the *measure*.

At *Hall* near *Foy*, there is a *Fagot*, which consists but of one piece of *Wood*, naturally grown in that form, with a *band* wrapped about it, and parted at the ends into *four sticks*, one of which is subdivided into *two* others: It was carefully preserved many years by an *Earl* of *Devonshire*, and looked on as portending the *fate* of his *Posterity*, which is since indeed come into the hands of *four Cornish* Gentlemen, one of whose *Estates* is likewise divided 'twixt two *Heirs*. This we have out of *Cambden*, and I here *note*, for the *Extravagancy* of the thing; though as to the verity of such *Portents* from *Trees*, &c. I do not find (upon enquiry, which I have diligently made of my Lord *Brereton*) that there is any certainty of the rising of those *Logs* in the *Lake* belonging to that Noble *Person*, so as still to premonish the *Death* of the *Heir* of that *Family*, how confidently soever reported. Sometimes it has happen'd, but the *Tradition* is not constant. To this *Class* may be referred what is affirmed concerning the fatal *Prediction* of *Oaks* bearing strange *leaves*, which may be enquired of: And of Accidents *fasciating* the boughs, and branches of *Trees*, Dr. *Plot* takes notice in *Willows* and other soft woods, especially in an *Asb* at *Biffeter* uniformly wreath'd two or three times round: such a curiosity also hangs up in the *Portic* of the *Physick-Garden* at *Oxford*, in a top-branch of *Holly*, which shews it likewise happening sometimes even to harder woods, and 'tis probable that such as we sometimes find so *helically* twisted, have receiv'd some blast, that has contracted the *Fibers*, and curl'd them in that extravagant manner.

29. But I will now describe to you the *Mystery* of *Charing* (whereof something was but touch'd in the *Process* of extracting *Tar* out of the *Pines*) as I receiv'd it from a most industrious *person*, and so conclude the *Chapter*.

There is made of *Char-coal* usually *three* sorts, *viz.* one for the *Iron-works*, a second for *Gun-powder*, and a third for *London* and the *Court*, besides *Small-coals*, of which we shall also speak in its due place.

We will begin with that sort which is us'd for the *Iron-works*, because the rest are made much after the same manner, and with very little difference.

The



The best *Wood* for this is good *Oak*, cut into lengths of *three* foot, as they size it for the *stack*: This is better than the *Cord-wood*, though of a large measure, and much us'd in *Essex*.

The *Wood* cut, and set in *Stacks* ready for the *Coaling*, chuse out some level place in the *Copp'ce*, the most free from stubs, &c. to make the *Hearth* on: In the midst of this *area* drive down a stake for your *Centre*, and with a *pole*, having a *ring* fasten'd to one of the extremes (or else with a *Cord* put over the *Centre*) describe a *Circumference* from twenty, or more feet *semidiameter*, according to the quantity of your *Wood* design'd for *Coaling*, which being near, may conveniently be *Chared* in that *Hearth*; and which at one time may be 12, 16, 20, 24, even to 30 *stack*: If 12 therefore be the quantity you will *Coal*, a *Circle* whose *diameter* is 24 foot, will suffice for the *Hearth*; If 20 *stack*, a *diameter* of 32 foot; If 30, 40 foot, and so proportionably.

Having thus marked out the ground, with *Mattocks*, *Haws*, and fit Instruments, bare it of the *Turf*, and of all other combustible stuff whatsoever, which you are to rake up towards the *Peripherie*, or out-side of the *Circumference*, for an *use* to be afterwards made of it; plaining, and levelling the ground within the *Circle*: This done, the *Wood* is to be brought from the nearest parts where it is *stack'd*, in *Wheel-barrow*s; and first the smallest of it plac'd at the utmost limit, or very margin of the *Hearth*, where it is to be set long-ways, as it lay in the *stack*; the biggest of the *Wood* pitch, or set up on end round about against the *small-wood*, and all this within the *circle*, till you come within five, or six foot of the *Centre*; at which distance you shall begin to set the *Wood* in a *Triangular* form (as in the following *Print*, a) till it come to be three foot high: Against *this* again, place your greater *Wood* almost *perpendicular*, reducing it from the *Triangular* to a *circular* form, till being come within a yard of the *Centre*, you may Pile the *Wood* long-ways, as it lay in the *stack*, being careful that the ends of the *Wood* do not touch the *Pole*, which must now be erected in the *Centre*, nine foot in height, that so there may remain a round *hole*, which is to be form'd in working up the *Stack-wood*, for a *Tunnel* and the more commodious *firing* of the *pit*, as they call it, though not very properly. This provided for, go on to *Pile*, and set your *Wood* upright to the other, as before; till having gain'd a *yard* more, you lay it long-ways again, as was shew'd: And thus continue the *Work*, still enterchanging the *position* of the *Wood*, till the whole *Area* of the *Hearth* and *Circle* be fill'd, and pil'd up at the least *eight* foot high, and so drawn in by degrees in *Piling*, that it resemble the form of a *copped* brown *Household-loaf*, filling all inequalities with the smaller *Trunchions*, till it lye very close, and be perfectly, and evenly shaped. This done, take *straw*, *haume*, or *fern*, and lay it on the out-side of the bottom of the *heap*, or *wood*, to keep the next *cover* from falling amongst the *sticks*: Upon *this*, put on the *Turf*, and cast on the *dust* and *Rubbish* which was grubb'd, and raked up at the making of the *Hearth*, and reserved near the *circle* of it; with *this* cover the whole heap of

*Wood*

*Wood* to the very top of the *Pit*, or *Tunnel*, to a reasonable, and competent thickness, beaten close and even, that so the *fire* may not *vent* but in the places where you intend it; and if in preparing the *Hearth*, at first, there did not rise sufficient *Turf* and *Rubbish* for this Work, supply it from some convenient place near to your *heap*: There be who cover this again with a *sandy*, or finer mould, which if it close well, need not be above an *inch* or two thick: This done, provide a *Screene*; by making light *hurdles* with *slit rods*, and *straw* of a competent thickness, to keep off the *Wind*, and broad, and high enough to defend an opposite side to the very top of your *Pit*, being eight or nine foot; and so as to be easily remov'd as need shall require for the *luing* of your *pit*.

When now all is in this posture, and the *Wood* well rang'd, and clos'd, as has been directed, set *fire* to your *heap*: But first you must provide you of a *Ladder* to ascend the top of your *Pit*: this they usually make of a curved *Tiller* fit to apply to the *convex* shape of the *Heap*, and cut it full of notches for the more commodious setting their Feet, whiles they govern the *Fire* above; therefore now they pull up, and take away the *Stake* which was erected at the *centre* to guide the building of the *Pile*, and cavity of the *Tunnel*. This done, put in a quantity of *Char-coals* (about a *peck*) and let them fall to the bottom of the *Hearth*; upon them cast in *coals* that are fully kindled; and when those which were first put in are beginning to sink, throw in more *fuel*; and so, from time to time, till the *Coals* have universally taken *fire* up to the top: Then cut an ample and reasonable thick *Turf*, and clap it over the hole, or *mouth* of the *Tunnel*, stopping it as close as may be with some of the former dust and rubbish: Lastly, with the handles of your *Rakers*, or the like, you must make *Vent-holes*, or *Registers* (as our *Chymists* would name them) through the stuff which covers your *Heap* to the very *Wood*, these in rangers of two or three foot distance quite round within a foot (or thereabout) of the *top*, though some begin them at the *bottom*: A day after, begin another row of *holes* a foot and half beneath the former; and so more, till they arrive to the ground, as occasion requires. Note, that as the *Pit* does *coal* and *sink* towards the *centre*, it is continually to be fed with short, and fitting *Wood*, that no part remain *unsir'd*; and if it *chars* faster at one part than at another, there close up the *vent-holes*, and open them where need is: A *Pit* will in this manner be burning off, and *charing*, five, or six days, and as it *coals*, the *smoke* from thick and gross clouds, will grow more blue, and livid, and the whole mass sink accordingly; so as by these indications you may the better know how to stop, and govern your *spiracles*. Two or three days it will only require for *cooling*, which (the *vents* being stopp'd) they assist, by taking now off the outward covering with a *Rabil* or *Rubber*; but *this*, not for above the space of one *yard* breadth at a time; and first they remove the coarsest, and grossest of it, throwing the finer over the *heap* again, that so it may neither *cool* too hastily, nor endanger the *burning* and reducing all to *Asbes*, should the whole *Pit* be uncover'd and expos'd to the *Air* at once; therefore they open it thus round by degrees. When

When now by all the former *Symptoms* you judge it fully *char-ed*, you may begin to *draw*; that is, to take out the *Coals*, first round the bottom, by which means the *Coals*, *Rubbish* and *Dust* sinking and falling in together may choak, and extinguish the *fire*. Your *Coals* sufficiently *cool'd*, with a very long-tooth'd *Rake*, and a *Vann*, you may load them into the *Coal-Wains*, which are made close with boards, purposely to carry them to *Market*: Of these *Coals* the grosser sort are commonly reserv'd for the *Forge*, and *Iron-works*; the middling and smoother put up in *Sacks*, and carried by the *Colliers* to *London* and the adjacent *Towns*; those which are *char'd* of the *Roots*, if pick'd out, are accounted best for *Chymical* fires, and where a lasting and extraordinary *blast* is requir'd.

30. *Coal* for the *Powder Mills* is made of *Alder-wood* (but *Lime-tree* were much better, had we it in that plenty as we easily might) *cut*, *stack'd*, and *set* on the *Hearth* like the former: But first, ought the *wood* to be wholly *disbark'd* (which work is to be done about *Mid-summer* before) and being thoroughly dry, it may be *Coal'd* in the same method, the *Heap* or *Pits* only somewhat smaller, by reason that they seldom *coat* above five, or six *stacks* at a time, laying it but *two lengths* of the *wood* one above the other, in form somewhat flatter on the *top* than what we have described. Likewise do they fling all their *Rubbish* and *Dust* on the *top*, and begin not to cover at the *bottom*, as in the former example. In like sort, when they have drawn up the *fire* in the *Tunnel*, and stopp'd it, they begin to draw down their *dust* by degrees round the heap; and this proportionably as it *fires*, till they come about to the *bottom*; all which is dispatch'd in the space of *two* days. One of these *Heaps* will *char* three score *Sacks* of *Coal*, which may all be carried at one time in a *Waggon*; and some make the *Court-coals* after the same manner. Lastly,

31. *Small-coals* are made of the *Spray*, and *Brush-wood* which is shipp'd off from the *branches* of *Copp'ce-wood*, and which is sometimes bound up into *Bavins* for this use; though also it be as frequently *chared* without binding, and then they call it *cooming* it together: This, they place in some near *floor*, made level, and freed of incumbrances, where setting one of the *Bavins* or part of the *spray* on fire, two men stand ready to throw on *Bavin* upon *Bavin* (as fast as they can take *fire*, which makes a very great and sudden blaze) till they have burnt all that lies near the place, to the number (it may be) of five, or six hundred *Bavins*: But ere they begin to set *fire*, they fill great *Tubs* or *Vessels* with *water*, which stand ready by them, and this they dash on with a great *dish* or *scoop*, so soon as ever they have thrown on all their *Bavins*, continually plying the great heap of glowing *Coals*, which gives a sudden stop to the fury of the *Fire*, whiles with a great *Rake* they lay, and spread it abroad, and ply their casting of *Water* still on the *Coals*, which are now perpetually turn'd by two men with great *Shovels*, a third throwing on the *water*: This they continue till no more *Fire* appears, though they cease not from being very hot: After this,



this, they *shovel* them up into great *heaps*, and when they are thoroughly *cold*, put them up in *Sacks* for *London*, where they use them amongst divers *Artificers*, both to kindle greater *Fires*, and to temper, and *aneal* their several Works: Lastly, this is to be observ'd, that what *wood* yields the finest *Coal*, is more flexible, and gentle than that which yields the contrary.

32. The best *Season* for the fetching home of other *Fuel*, is from *June*; the *Ways* being then most dry, and passable, yet I know some good *Husbands* will begin rather in *May*; because *Fallowing*, and stirring of Ground for *Corn*, comes in the ensuing *Months*, and the *Days* are long enough, and *Swains* have then least to do.



b The Central Pole or place of the Tunnel with the Area making ready.

a The Wood plac'd about it in Triangle.

c The Coal-Wood pil'd up before it be covered with Earth.

d The Coal-pit or Pile fir'd.

33. And thus we have seen how for *Houfe-boot*, and *Ship-boot*, *Plow-boot*, *Hey-boot*, and *Fire-boot*, the *Planting*, and *Propagation* of *Timber* and *Forest-Trees* is requisite, so as it was not for nothing, that the very *Name* (which the *Greeks* generally apply'd to *Timber*.) ὕλη, by *Senecdoche*, was taken always *pro materia*; since we hardly find any thing in *Nature* more universally *useful*; or, in comparison with it, deserving the name of *Material*.

See for this Dr.  
Grew of the  
Vegetation of  
Trunks, cap. 7.

34. Lastly, to complete this Chapter of the universal use of *Trees*, and the *Parts* of them, something I could be tempted to say concerning *Staves*, *Wands*, &c. their *Antiquity*, *Use*, *Divine*, *Domestick*,

*mestick*, *Civil*, and *Political*; the time of *Cutting*, manner of *Seasoning*, *Forming*, and other curious particulars (how *dry* soever the *Subject* may appear) both of *Delight* and *Profit*: but we reserve it for some more fit opportunity, and perhaps, it may merit a peculiar *Treatise*, as acceptable, as it will prove divertisant. Instead of this, we will therefore gratifie our *Reader* with some no inconsiderable *Secrets*: But first we will begin with a few plain *Directions* for such Persons and *Countrey Gentlemen*, as being far distant from, or unhandsonely impos'd upon by common *Painters*, may be desirous to know how to *Stop*, *Prime*, and *Paint* their *Timber-work* at home, and save the *Expense* of *Work* by any of their *Servants* indu'd with an ordinary *Capacity*.

*Pntty* to stop the *chaps* and *cracks* of wrought *Timber*, is made of *White*, and *Red-lead*, and some *Spanish-white* (not much) temper'd, and bruised with so much *Lin-seed Oyl* as will bring it to the Consistence of a *Past*. Then,

Your first *Priming* shall be of *Oaker* and *Spanish-white*, very thinly ground: The *second* with the same, a little *Whiter*; but it matters not much. The *third* and last, with *White-lead* alone; some mingle a little *Spanish white* with it, but it is better omitted. If you desire it exquisite, instead of *Lin-seed Oyl*, use that of *Wal-nuts*: But the ordinary *Stone-colour* for gross work, expos'd to the *Air*, may be of less *Expense*, with the more ordinary *Oyl*, to which you may add a little *Char-coal* in the *Grinding*.

*Blew*, is made of *Indigo*, with a small addition of *Red-lead*, or *Verdigriese* for a *dryer*; unless you will use *drying-Oyl*, which is much preferable, and is made of *Lin-seed-Oyl* boil'd with a little *Um-ber* bruised small: I speak nothing here of *Smalt* and *Byce*, which is only done by *Strewing*.

*Green*, with *Verdigriese* ground with *Lin-seed-Oyl* pretty thick, and then temper'd with *Joyners Vernish* in a glaz'd *Pot* of *Earth* (the best to preserve your *Colours* in) till it run somewhat thin; and just touch it with your *Brush*, when you lay it on, having *Prim'd* it the *second* time with *White*.

*Note*, that every *Primer* must be dry, before you go it over again.

If you will *Re-vaille*, as they term it, and shadow, or Vein your *Stone-colour*, there is a *Colour* call'd *Shadowing-Black*; or you may now and then lightly touch it with a little *Red-lead*; or work with *Umber*.

It will also behove you to have a good smooth *Slat*, and a *Pib-ble Muller* well polish'd, which may be bought at *London*; as likewise a dozen of large, and lesser *Brushes*, and *Glaz'd Pots*; and to grind the *Colours* perfectly well. The *Spanish-white* requires little labour; the *Shadowing Black*, none at all.

When you have finish'd, wash your *Brushes* with warm-Water and a little *sop*: Preserve your *Oyl* in *Bladders*; and what *Colour* you leave, plunge the *Pots* into fair *Water*, so as they may stand a little cover'd in it, which will keep them from growing *dry*, till you have occasion for them. That you may not be altogether ig-

norant of the *charge*, and *Price* of the *Ingredients*, which seldom varies:

Clear, and sweet *Lin-seed Oyl* is usually had for 4 *s* per *Gallon*.  
*Spruce-Oker*, of all sorts to *Prime* with, 3 *s*. per *Pound*.

*Spanish-white*, for half a *Penny*: *White-lead* 3 *d*. per *Pound*.

*Vert-de-Greece*, clean and bright, 3 *s*. per *Pound*. *Black* to shadow with, exceeding cheap. *Joiners Vernish*, 6 *d*. per *Pound*. So as for farther direction; of *White-lead* six *pounds*, *Span. white* six *pounds*, *Spruce-Oker* three *pounds*, *Vert-de-Greece* half a *pound*, *Vernish* one *pound*, *Shadowing-black* half a *pound*, &c. will serve one for a pretty deal of *Work*, and easily inform what *quantities* you should provide for a greater, or lesser occasion.

We will next impart a *Receipt* for a cheap *Black-dye*, such yet as no *Weather* will fetch out, and that may be of use both *within* and *without* doors, upon *Wainscot*, or any fine *Timber*, as I once apply'd it to a *Coach* with perfect success.

Take of *Galls*, grossly contus'd in a *Stone Morter*, one *pound*, boyl them in *three quarts* of *White-wine Vinegar* to the diminution of one part, two remaining: With *this*, rub the *Wood* twice over; Then, take of the *Silk-Diers black*, liquid (cheap and easie to be had) a convenient quantity, mix it at discretion with *Lamp-black* and *Aqua vite*, sufficient to make it thin enough to pass a *Strainer*: With *this*, die over your *Work* again; and if at any time it be stain'd or spotted with dirt, &c. rubbing it only with a *Wollen cloth* dip'd in *Oyl*, it will not only recover, but present you with a very fair and noble *polish*. There is a *Black* which *Joiners* use to tinge their *Pear-tree* with, and make it resemble *Ebony*, and likewise *Fir*, and other *Woods* for *Cabinets*, *Picture-Frames*, &c. which is this.

Take *Log-wood q. s.* boyl it in ordinary *Lie*, and with this paint them over: when 'tis *dry*, work it over a *second* time with *Lamp-black* and strong *Size*: That also *dry*, rub off the dusty *Sootiness* adhering to it, with a soft *Brush*, or *Cloth*; then melt some *Bees-wax*, mixing it with your *Lamp black* and *Size*, and when this is cold, make it up into a *Ball*, and rub over your former *Black*: Lastly, with a *Polishing brush* (made of short stiff *Boars* Bristles, and fastned with *Wyre*) labour it till the *Lustre* be to your liking. But,

The black *Putty*, wherewith they stop, and fill up *cracks* and *fissures*, in *Ebony*, and other fine *wood*, is compos'd of a part of the purest *Rosin*, *Bees-wax*, and *Lamp-black*: This they heat and drop into the *Craunies*; then with an *hot Iron*, glaze it over, and being cold, scrape it even with a sharp *Chizel*, and after all, polish it with a *Brush* of *bents*, a *wollen-cloth*, *Felt*, and an *Hogs-hair* Rubber: Also *Mastic* alone, mingled with a proper *Colour* is of no less effect.

35. We conclude all, with that incomparable *Secret* of the *Japon* or *China-Vernishes*, which has hitherto been reserv'd so choicely among the *Virtuosi*; with which I shall suppose to have abundantly gratified the most curious employers of the finer *woods*.

Take



Take a *Pint* of *Spirit of Wine* exquisitely *dephlegm'd*, four *Ounces* of *Gum-Lacq*, which thus cleanse : break it first from the sticks and rubbish, and roughly contusing it in a *Mortar*, put it to steep in *Fountain water*, ti'd up in a bag of coarse *Linnen*, together with a very small morsel of the best *Castle-Sope*, for 12 hours ; then rub out all the *tincture* from it, to which add a little *Alum* and reserve it apart : The *Gum-lacq* remaining in the bag, with one *Ounce* of *Sandrac* (some add as much *Mastic* and *White-Amber*) dissolve in a large *Matras* (well stopp'd) with the *spirit of Wine* by a two days *digestion*, frequently agitating it, that it adhere not to the *Glass* : Then strain, and press it forth into a lesser *Vessel* ; Some, after the first *Infusion* upon the *Ashes*, after twenty four hours, augment the *heat*, and transfer the *Matras* to the *Sand-bath*, till the *Liquor* begins to *simper* ; and when the upper part of the *Matras* grows a little *hot*, and that the *Gum-lacq* is melted, which by that time (if the *Operation* be heeded) commonly it is, strain it through a *Linnen-cloth*, and press it 'twixt two sticks into the *glass*, to be kept for use, which it will eternally be, if well stopp'd.

#### The Application.

The *Wood* which you would *Vernish*, should be very clean, smooth, and without the least *freckle* or *flaw* ; and in case there be any, stop them with a paste made of *Gum Tragacanth*, incorporated with what *Colour* you design : Then cover it with a *layer* of *Vernish* purely, till it be sufficiently drench'd with it : Then take seven times the quantity of the *Vernish*, as you do of *Colour*, and bruise it in a small earthen dish glaz'd, with a piece of hard *wood*, till they are well mingled : Apply this with a very fine and full *Pencil* ; a quarter of an hour after, do it over again, even to three times successively ; and if every time it be permitted to *dry*, before you put on the next, 'twill prove the better : Within two hours after these four *layers* (or sooner if you please) *Polish* it with *Presle* (which our *Cabinet-makers* call as I think, *Dutch-Reeds*) wet, or dry ; nor much imports it, though in doing this, you should chance to discover any of the *wood* ; since you are to pass it over four or five times as above ; and if it be not yet smooth enough, *Presle* it again with the *Reeds*, but now very tenderly : Then rub it sufficiently with *Tripoly*, and a little *Oyl-Olive*, or *Water* : Lastly, cover it once or twice again with your *Vernish*, and two days after, polish it as before with *Tripoly*, and a piece of *Hatter's Felt*.

#### The Colours.

To make it of a fair *Red*, Take *Spanish Vermilion*, with a quarter part of *Venice Lack*.

For *Black*, *Ivory* calcin'd (as *Chymists* speak) 'twixt two well luted *Crucibles*, which being ground in *water*, with the best and greenest *Copper*, and so let *dry*, reserve.

For *Blue*, take *Ultramarine*, and only twice as much *Vernish*, as of *Colour*. The rest, are to be appli'd like the *Red*, except it be the *Green*, which is hard to make fair and vivid, and therefore seldom used.

*Note*. The right *Japon*, is done with three or four *Layers* of *Vernish* with the *Colours*; then two of pure *Vernish* un-colour'd (which is made by the former *Process*, without the *Sandrac*, which is only mingled and used for *Reds*) which must be done with a swift, and even stroke, that it may not dry before the *Aventurin* be sifted on it; and then you are to cover it with so many *Layers* of pure *Vernish*, as will render it like polish'd *Glass*. Last of all fourbush it with *Tripoly*, *Oyl*, and the *Felt*, as before directed. *Note*,

By *Venturine* is meant the most delicate, and slender *Golden-wyre* such as *Embroiderers* use, reduc'd to a kind of powder, as small as you can file or clipp it: this strew'd upon the first *Layer* of pure *Vernish*, when dry, superinduce what *Colour* you please; and this is prettily imitated with several *Talkes*.

This being the first time that so rare a *Secret* has been imparted (and which since the first publication of it, has been so successfully improv'd amongst our *Cabinet-makers* here in *London*) the *Reader* will believe that I envy him nothing which may be of use to the *Publique*: And though many years since we were *Master* of this *Curiosity*, *Athanasius Kercher* has set down a *Process* in his late *China Illustrata* pretty faithfully; yet, besides that it only speaks *Latine* (such as 'tis) it is nothing so perfect as ours. However, there we learn, that the most opulent Province of *Chekiang* is for nothing more celebrated, than the excellent *Paper* which it produces, and the *Gumme* call'd *Cie* (extilling from certain *Trees*) with which they compose their famous *Vernish*, so universally valu'd over the *World*; because it is found above all other *Inventions* of that nature, to preserve, and beautifie wood, above any thing which has hitherto been detected: And it has accordingly so generally obtained with them, that they have whole *Rooms* and ample *Chambers*, Wainscotted therewith, and divers of their most precious *Furniture*; as *Cabinets*, *Tables*, *Stools*, *Beds*, *Dishes*, *Skreens*, *Staves*, *Frames*, *Pots*, and other *Utensils*: But long it was ere we could for all this, approach it in *Europe* to any purpose, till *F. Eustachius Imart* an *Augustine-Monk*, obtain'd the *Secret*, and oblig'd us with it.

I know not whether it may be any Service to speak here of colour'd Woods, I mean such as are naturally so, because besides the *Berberis* for *Tellow*, *Holly* for *White*, and *Plum-tree* with *quicklime* and *Urine*, for *red*, we have very few: Our *Inlayers* use *Fustic*, *Locust*, or *Acacia*; *Brasile*, *Prince* and *Rose-wood* for *Tellow* and *Reds*, with several others brought from both the *Indies*; but when they would imitate the natural turning of *Leaves* in their curious *Compartiments* and *bordures* of *Flower works*, they effect it by dipping the pieces (first cut into shape and ready to *In-lay*) so far into hot *Sand*, as they would have the *Shadow*, and the heat of the *Sand* darkens it so gradually, without detriment or burning

ing the thin Chip, as one would conceive it to be natural: Note, that the *Sand* is to be beaten in some very thin Brass-pan, like to the bottom of a Scale or Balance: This I mention, because the burning with *Irons*, or *Aqua-fortis*, is not comparable to it.

I learn also, that *soft Woods* attain little politure without infinite labour, and the expedient is, to *Plane* it often, and every time you do so, to smear it with strong *Glew*, which easily penetrating, hardens it; and the frequenter you do this, and still *Plane* it, the harder, and sleeker it will remain.

And now we have spoken of *Glew*, 'tis so common and cheap, that I need not tell you it is made by boyling the *skues*, &c. of *Sheeps-trotters*, parings of *raw Hides*, &c. to a *Gelly*, and straining it: But the finer, and more delicate Work is best fastned with *Fish Glew*, to be had of the *Drongist* by the name of *Ichthyocolla*; you may find how the best is made of the *skin* of *Sturgeon*, in the *Philos. Transf. Vol. II. Num. 129.* and here I conclude.

36. Let us now then sum up all the good *qualities*, and *transcendent* perfections of *Trees*, in the harmonious *Poets* Consort of *Elogies*.

—Pines are for Masts an useful Wood,  
cedar and Cypres, to build Houses good:  
Hence covers for their Carts, and spokes for Wheels  
Swains make, and Ships do form their crooked Keels:  
The Twiggy Sallows, Elms with leaves are freight;  
Myrtles stout Spears, and Cornel good for fight:  
The Yews into Myrcan Bows are bent;  
Smooth Limes, and Box, the Turners Instrument  
Shaves into form, and hollow Cups does trim;  
And down the rapid Po light Alders swim:  
In hollow Bark Bees do their hony slive,  
And make the Trunk of an old Oak their Hive.

—dant utile lignum  
Navigis Pinos, domibus cedrosque cupressosque;  
Hinc radios trivere rotis, hinc tympana plaustris  
Agricolæ, & pandas ratibus posuere carinas.  
Viminibus Salices, sacunde frondibus Ulmi:  
At Myrtus validis hastilibus & bona bello  
Cornus: Myrcos Taxi taxquantur in arcus.  
Nec Tilia leves, aut torno rastle Buxum,  
Non formam accipiunt ferroque cavantur acuto:  
Nec non torrentem undam levis innatat Alnus  
Missa Pado, nec non & apes examina condunt  
Corticibusque cavis, vitisoleque lictis alvo:  
Georg. 2.

and the most ingenious *Ovid*, where he introduces the miraculous *Groves* rais'd by the melodious *Song* of *Orpheus*,

—Nor Trees of Chaony,  
The Poplar, various Oaks that pierce the sky,  
Soft Linden, smooth-rind Beech, unmarried Bays,  
The brittle Hazel, Ash, whose spears we praise,  
Unkhotty Fir, the solace shading Planes,  
Rough Chestnuts, Maple Fleck'd with different granes,  
Stream-bordering Willow, Lotus loving lakes,  
Tuff Box, whom never fappy Spring forsakes,  
The slender Tamarisk, with Trees that bear  
A purple Fig, nor Myrtles absent were.  
The wanton Vio wreath'd in amorous twines,  
Vines bearing Grapes, and Elms supporting Vines,  
Straight Service-Trees, Trees dropping Pitch, fruit-red  
Arbutus, these the rest accompanied.  
With limber Palms, of Victory the prize:  
And upright Pine, whose leaves like bristles rise,  
Priz'd by the Mother of the Gods.—

Sandys.

—non Chaonias absuit arbor,  
Non nemus Heliadum, non frondibus Esculus Altis,  
Nec Tilia molles nec Fagus, & innuba Laurus,  
Et Coryli fragiles, & Fraxinus utilis hastis;  
Enodisque Abies, curvataque glandibus Ilex,  
Et Platanus genialis, Acerque coloribus impar,  
Amnicoleque simul Salices, & aquatica Lotos,  
Perpetuæque virens Buxus, tenuisque Myrica,  
Et bicolor Myrtus, & baccis cernula Ficus.  
Vos quoque flexi-pedes Hederae vernistis, & una  
Pampinea Vites, & amicta Vitibus Ulmi,  
Ornique, & Piceæ, Pomoque onerata rubenti  
Arbutus, & lenta victoris premia Palme,  
Et succincta comas, hirsutaque vertice Pinus  
Grata Deum matri, &c.—

Met. 10.

as the incomparable *Poet* goes on, and is imitated by our divine *Spencer*, where he brings his gentle *Knight* into a shady *Grove*, praising

— the



— the *Trees* so straight, and high,  
 The sailing *Pine*, the *Ceder* proud, and tall,  
 The Vine-prop *Elm*, the *Poplar* never dry,  
 The builder *Oak*, sole King of *Forests* all;  
 The *Aspine*, good for Staves; the *Cypress* funeral:  
 The *Laurel*, meed of mighty Conquerours  
 And Poets sage; The *Fir* that weepeth still;  
 The *Willow*, worn of forlorn Paramours;  
 The *Engb*, obedient to the benders will;  
 The *Birch* for Shafts; the *Sallow* for the Mill;  
 The *Myrrhe* sweet bleeding in the bitter wound;  
 The War-like *Beech*; the *Asb* for nothing ill;  
 The fruitful *Olive*; and the *Platane* round;  
 The Carver *Holm*; the *Maple*, seldom inward found.

Canto. 1.

And in this *Symphony* might the noble *Tasso* bear likewise his part;  
 but that these are sufficient, & tria sunt omnia.

37. For we have already spoken of that modern *Art* of *Tapping*  
*Trees* in the *Spring*, by which doubtless some excellent and *speci-*  
*fic Medicines* may be attained; as from the *Birch* for the *Stone*;  
 from *Elms*, and *Elder* against *Feavers*; so from the *Vine*, the  
*Oak*, and even the very *Bramble*, &c. besides the wholsom and  
 pleasant *Drinks*, *Spirits*, &c. that may possibly be educed out  
 of them all, which we leave to the *Industrious*, satisfying our  
 selves, that we have been among the *first* who have *hinted*, and  
*Publisch'd* the *ways* of performing it.

What now remains concerns only some general *Precepts*, and  
*Directions* applicable to most of that we have formerly touched;  
 together with a *Brief* of what farther *Laws* have been enacted for  
 the *Improvement*, and preservation of *Woodt*; and which having  
 dispatch'd, we shall with a short *Paranesis* touching the present or-  
 dering, and disposing of his *Majesties Plantations* for the future  
 benefit of the *Nation*, put an end to this rustick Discourse.

C H A P.

C H A P. XXXII.

Aphorisms, or certain general Precepts of use  
to the foregoing Chapters.

1. **T**R Y all sorts of *Seeds*, and by their *thriving* you shall best discern what are the most proper *kinds* for Grounds,

*Quippe solo natura subest*——

and of these design the main of your *Plantation*. Try all *Soils*, and fit the *Species* to their natures: *Beech*, *Hazel*, *Holly*, &c. affect Gravel and gritty; and if mix'd with loam, *Oak*, *Ash*, *Elm*, &c. In stiff ground the *Ash*, *Horn-beam*, &c. and in a light feeding ground or loam, any sort whatsoever: In the lower, and wetter lands, the *Aquatics*, &c.

2. Keep your newly sown *seeds* continually fresh, and in the *shade* (as much as may be) till they peep.

3. All *curious* *Seeds*, and *Plants* are diligently to be *weeded*, till they are strong enough to over-drop or suppress them: And you shall carefully *haw*, *half dig*, and stir up the earth about their *Roots* during the first *three* years; especially, in the *Vernal*, and *Autumnal Equinoxes*: This work to be done in a *moist* season for the first year, to prevent the *dust*, and the suffocating of the tender *buds*; but afterwards, in the more dry weather.

4. *Plants*, rais'd from *seed*, shall be *thinn'd* where they come up too *thick*; and none so fit as you thus draw, to be *transplanted* into *Hedge-rows*, especially, where ground is precious.

5. In *transplanting*, omit not the placing of your *Trees* towards their accustomed *Aspect*. And if you have leisure, make the *holes* the *Autumn* before, the wider the better, three foot over, and two deep is little enough if the *Ground* be any thing *stiff*; often stirring, and turning the *mould*, and mixing it with *better* as you may find cause: This done, dig, or *plough* about them, and that as near their *stems* as you can come, without hurting them, and therefore rather use the *Spade* for the first two or three years; and preserve what you plant *steady* from the *Winds*, and annoyance of *Cattel*, &c.

6. Remove the *softest* wood to the *moistest* grounds, as in *Num. I.*

*Divisæ arboribus partiæ*——

7. Begin to *Transplant* *Forest-trees* when the *leaves* fall after *Michaelmas*; you may adventure when they are *tarnish'd*, and grow yellow: It is lost time to commence later, and for the most part of your *Trees*, early *Transplanters* seldom repent; for some-  
times

times a tedious bind of *Frost* prevents the whole *season*, and the baldness of the *Tree* is a note of deceit; for some *Oaks*, *Hornbeam*, and most *Beeches*, preserve their *dead leaves* till new ones push them off.

8. Set deeper in the *lighter grounds* than in the *strong*; but shallowest in *clay*: five inches is sufficient for the *dryest*, and one or two for the *moist*, provided you establish them against *winds*.

9. Plant forth in *warm*, and *moist* seasons; the *Air* tranquil and serene; the *wind* westerly; but never whiles it actually *freezes*, *rains*, or in *Misty Weather*; for it moulds, and infects the *Roots*.

10. What you gather, and draw out of *Woods*, plant immediately, for their *Roots* are very apt to be mortified or harden'd and wither'd by the *winds*, and cold air.

11. *Trees*, produc'd from *Seeds* must have the *Tap-roots* abated (the *Walnut-tree*, and some others excepted, and yet if Planted merely for the *Fruit*, some affirm it may be adventur'd on with success) and the bruised parts cut away; but sparing the *fibrous*, for they are the principal *feeders*; and those who cleanse them too much, are punish'd for the mistake.

12. In *Spring*, rub off some of the *Collateral Buds*, to check the exuberancy of *Sap* in the *branches*, till the *Roots* be well establish'd.

13. *Transplant* no more than you well *Fence*; for *that* neglected, *Tree-culture* comes to nothing: Therefore all young set *Trees* should be defended from the *winds*, and *Sun*; especially the *East*, and *North*, till their *Roots* are fixed; that is, till you perceive them *shoot*; and the not exactly observing of this *Article*, is cause of the perishing of the most tender *Plantations*; for it is the invasion of these two *assailants* which does more mischief to our new set, and less hardy *Trees*, than the most severe and durable *Frosts* of a whole *Winter*.

14. The properest *Soil*, and most natural, apply to distinct *species*, *Nec verò terra ferre omnes omnia possunt*. Yet we find by experience, that most of our *Forest-Trees* grow well enough in the *concretest* Lands; provided there be a competent depth of *mould*: For albeit most of our *wild Plants* covet to run just under the *surface*; yet where there is not sufficient depth to *cool* them, and entertain the *Moisture* and *Influences*, they are neither lasting, nor prosperous.

15. *Wood* well Planted, will grow in *Moorish*, *Boggy*, *Heathy*, and the *stoniest* grounds: Only the white, and blew *clay* (which is commonly the best *Pasture*) is the worst for *wood*; and such good *Timber* as we find in any of these (*Oaks* excepted) is of an excessive age, requiring thrice the time to arrive at their stature.

16. If the *season* require it, all new *Plantations* are to be plied with *waterings*, which is better pour'd into a *circle* at some distance from the *Roots*, which should continually be *bared* of *Grass*, and if the *water* be *rich*, or *impregnated*, the *shoots* will soon discover it; for the *Liquor* being *percolated* through a quantity of *earth*, will



will carry the *nitrous* virtue of the *soil* with it; by no means therefore *water* at the *stem*; because it walshes the *mould* from the *Root*, comes too crude, and endangers their *rotting*: But,

17. For the cooling and refreshing *Tree-roots*, the congesting of rotten *littier* sprinkl'd over with fine earth, or place *Pot-sheards*, *Flints*, or *Pibbles* near the foot of the *stem*, for so the *Poet*,

Lime-stones, or squalid Shells, that may the Rain,  
Vapours, and gliding moisture entertain.

*Aut lapidem bibulum, aut squallenteis infode conchas,  
Inter enim labentur aquæ, tenuisque subibit  
Halitus*——

Georg. 2.

But remember you *remove* them after a competent time, else the *Vermine*, *Snails*, and *Insects* which they produce and shelter, will gnaw, and greatly injure their *Bark*, and therefore to lay a *Coat* of moist rotten *littier* with a little *Earth* upon it, will preserve it moist in *Summer*, and warm in *Winter*, enriching the *showrs* and *dews* that strain through it.

18. Young *Plants* will be strangled with *Corn*, *Oats*, *Pease*, or *Hemp*, or any rankly growing *Grain*, if a competent *circle*, and distance be not left (as of near a *yard*, or so) of the *Stem*; this is a *useful* remark.

19. *Cut* no *Trees* (especially, having an eminent *Pith* in them; being *young* and *tender* too) when either *heat*, or *cold* are in extremes; nor in very *wet*, or *snowy* weather; and in this work it is profitable to discharge all *Trees* of unthriving, broken, wind-shaken *browse*, and such as our *Law* terms *Cablicia*, and to take them off to the quick,

——— *ne pars sincera trahatur.*

And for *Ever-greens*, especially such as are tender, prune them not after *Planting*, till they do *Radicare*, that is, by some little fresh *shoot*, discover that they have taken.

20. *Cut* not off the top of the *leading-twigg* or *shoot* (unless very crooked, and then at the next erect *bud*) when you *transplant* *Timber trees*, but those of the *Collateral* you may shorten, stripping up the rest close to the *stem*; and such as you do spare, let them not be the most *opposite*, but rather one above another to preserve the part from swelling, and hindring its taper growth: Be careful also to keep your *Trees* from being over *top-heavy*, by shortning the side branches competently near the *stem*: Young plants nipt either by the *Frost* or teeth of *Cattel* do commonly break on the sides, which impedes both growth and spiring: In this case, prune off some, and quicken the *leading-shoot* with your knife, at some distance beneath its infirmity: But if it be in a very unlikely condition at *Spring* cut off *all* close to the very ground, and hope for a new *shoot*; continually suppressing whatever else may accompany it, by cutting them away in *Summer*.

21. *Walnut*, *Ash*, and *Pithy-trees* are safer prun'd in *Summer* and warm weather, than in the *Spring*, whatever the vulgar fancy. And so

I will conclude with the *Technical* names, or *dissimilar* parts of *Trees*, as I find them enumerated by the *Industrious* and *Learned* *Dr. Merett*. *Scapus*, *Truncus*, *Cortex*, *Liber*, *Malicorium*, *Matrix*, *Medulla* & *Cor*, *Pecten*, *Circuli*, *Sarculi*, *Rami*, *Sarmenta*, *Ramasculi*, *Spadix*, *Vimen*, *Virgultum* & *Cremum*, *Vitilia*, *Talea*, *Scobs*, *Termes*, *Turiones*, *Frondes*, *Cachryas* & *Nucamentum*, *Julus* & *Catulus*, *Coma* : The Species *Frutex*, *Suffrutex*, &c. all which I leave to be put into good and proper *English*, by those who shall once oblige our *Nation* with a full, and absolutely complete *Dictionary*, as yet a *desiderate* amongst us.

To this I shall add, the *Time*, and *Season* of the *flourishing* of *Trees*, computing from the *entrie* of each *Month* as the *figures* denote; that is, from *March* (where the *Doctor* begins) inclusive-ly. *March*, *Apr* 3. (1.) from *March* to *May*, viz. one *Month*; & sic de ceteris) *Populus* 2. *Quercus* 5. *Sorbus* 2. *Ulmus* 2. *April*, *Alnus* 2. *Betula* 2. *Castanea* 4. *Euonymus* 2. *Fagus* 2. *Fraxinus* 2. *Nux-Juglans* 3. *Salix* 2. *Sambucus* 2. *May*, *Cornus* 2. *Genista* 4. *Juniperus*, *Morus* 2. *Tilia* 4. *June*, *Aquifolium* 2. *July*, *Arbutus* 2. *Feb*. *Buxus* 2.

Many more useful *Observations* are to be collected, and added to these, from the diligent experience of *Planters*.

## C H A P. XXXIII.

### Of the Laws and Statutes for the Preservation, and Improvement of Woods, &c.

1. **T**IS not to be passed by, that the very first *Law* we find which was ever promulg'd, was concerning *Trees*; and that *Laws* themselves were first *Written* upon them, or *Tables* compos'd of them; and after that Establishment in *Paradise*, the next we meet withal are as *Antient* as *Moses*; you may find the *Statute* at large in *Deut* c. 20. v. 19, 20. Which though they chiefly tended to *Fruit-trees*, even in an *Enemies* Country, yet you will find a case of necessity, only alledg'd for the permission to destroy any other:

2. To Summe up briefly the *Laws*, and *Civil Constitutions* of great *Antiquity*, by which *Servius* informs us 'twas no less than *Capital*, *alienas arbores incidere*; the *Lex Aquilia*, and those of the *xii. Tabb.* mention'd by *Paulus*, *Cajus*, *Julianus*, and others of that *Robe*, repeated divers more.

It was by those *Sacred Constitutions* provided, that none might so much as *Plant Trees* on the *Confines* of his *Neighbours* *Ground*, but he was to leave a *space* of at the least *five foot*, for the smallest *Tree*, that they might not injure him with their shadow. *Si Arbor*

in

*in Vicini agrum impenderit, eam subluato, &c.* and if for all this, any hung over farther, 'twas to be strip'd up fifteen foot; And this Law *Baldwinus*, *Olderdorpius*, and *Hotoman* recites out of *Ulpian* L. 1. F. de Arb. cadend. where we have the *Prators Interdict* express'd, and the impendent Wood adjudged to appertain to him whose field, or fence was thereby damnified: Nay, the Wise *Solon* prescribed *Ordinances* for the very distances of *Trees*; as the divine *Plato* did against stealing of fruit, and violating of *Plantations*: And the interdiction *de Glande legenda* runs thus in *Ulpian*, *AIT PRÆTOR, GLANDEM, QUÆ EX ILLIUS AGRO IN TVUM CADIT, QVO MINUS ILLI TERTIO QVOQUE DIE LEGERE AVFERRE LICEAT, VIM FIERI VETO.* And yet, though by the *Prators* permission he might come every third day to gather it up without *Trespas*, his Neighbour was to share of the *Mast* which so fell into his Ground; and this Chapter is well supplied by *Pliny* l. 16. c. 5. and *Cajus* upon the Place, interprets *Glandem* to signifie not the *Acorns* of the *Oak* alone, but all sorts of fruit whatsoever, l. 136. F. de Verb. Signif. L. *Unis ff. de Glande leg.* as by usage of the *Greeks*, amongst whom ἀνεῖδ' ὅρα imports all kind of *Trees*.

Moreover, no *Trees* might be Planted near *Publique Aquæ-duçts*, lest the *Roots* should insinuate into, and displace the *Stones*: Nor on the very margent of *Navigable Rivers*, lest the *Boats* and other *Vessels* passing to and fro, should be hindred, and therefore such impediments were call'd *Retæ*, quia *Naves retinent*, says the *Gloss*; and because the falling of the leaves corrupted the *Water*. So nor within such a distance of *High-ways* (which also our own *Laws* prohibit) that they might dry the better, and less cumber the *Traveller*. *Trees* that obstructed the *Foundation* of *Houses* were to be fell'd; *Barthol.* L. 1. doct. c. de Interdict. *Ulp.* in L. priore ff. de Arborum cadend. *Trees* spreading their *Roots* in neighbour-ground, to be in common; See *Cujas* and *Paulus* in L. Arb. ff. de Communi dividend. where more of the *Alienation* of *Trees* fell'd, and not standing but with the *Funds*, as also of the *Usu-fruit* of *Trees*, and the difference twixt *Arbores Grandes*, and *Cremiales* or *Cedua*, of all which *Ulpian*, *Baldus*, *Alciat*, with the *Laws* to govern the *Conluatores* and *Subluatores*, and *Pruners*; vide *Pan. f. c. Sent. l. 5. Festus, &c.* for we pass over what concerns *Vines* and *Olive-trees*, to be found in *Cato de R. R. &c.* Nor is it here that we design to enlarge, as those who have *philologiz'd* on this occasion *de Sycophantis*, and other curious *criticisms*; but to pass now on, and confine my self to the prudent *Sanctions* of our own *Parliaments*: for though according to the old and best Spirit of true *English*, we ought to be more powerfully led by his *Majesties* Example, than to have need of more cogent and violent *Laws*; yet that our *Discourse* may be as ample, and as little defective as we can render it, something 'tis fit should be spoken concerning such *Laws* and *Ordinances* as have been from time to time constituted amongst us for the *Encouragement*, and *Direction* of such as do well, and for the *Animadversion* and *Punishment* of those



those who continue *refractory*, which I deduce in this order.

3. From the time of *Edward the fourth*, were enacted many excellent *Laws* for the *Planting*, *securing*, *cutting*, and *ordering* of *Woods*, *Copp'ces*, and *Under-woods*, as then they took cognizance of them; together with the several *penalties* upon the *Infringers*; especially from the 25 of *Hen. 8.* 17. &c. confirm'd by the 13 and 27. of *Q. Eliz. cap. 25.* 19. &c. which are diligently to be consulted, revived, put in execution, and enlarg'd where any defect is apparent; as in particular the *Act* of exempting of *Timber* of 22 years growth from *Tythe*, for a longer period, to render it compleat, and more effectual to their *Improvement*: And that *Law* repealed, by which *Willows*, *Sallows*, *Oziers*, &c. which they term *Sub-bois*, are reputed but as *Weeds*.

4. Severer *punishments* have lately been ordain'd against our *Wood-stealers*, destroyers of young *Trees*, &c. By an antient *Law* of some *Nation*, I read he forfeited his *Hand*, who beheaded a *Tree* without permission of the *Owner*; and I cannot say they are sharp ones, when I compare the severity of our *Laws* against *Mare-stealers*; nor am I by inclination the least *cruel*; but I do affirm, we might as well live without *Mares*, as without *Masts* and *Ships*, which are our *wooden*, but no less profitable *Horses*.

5. And here we cannot but perstringe those *Ryotous Assemblies* of *Idle People*, who under pretence of going a *Maying* (as they term it) do oftentimes cut down and carry away fine straight *Trees*, to set up before some *Ale-house*, or *Revelling-place*, where they keep their drunken *Bacchanalias*: For though this *Custom* was, I read, introduc'd by the *Emperor Anastasius*, to abolish the *Gentile Majana* of the *Romans* at *Ostia*; which was to transfer a great *Oaken-Tree* out of some *Forest* into the *Town*, and erect it before their *Mistress's Door*; yet I think it were better to be quite abolish'd amongst us, for many *reasons*, besides that of occasioning so much *wast* and *spoyl* as we find is done to *Trees* at that *Season*, under this wanton pretence, by *breaking*, *mangling*, and *tearing* down of *branches*, and intire *Arms* of *Trees*, to adorn their *Wooden-Idol*. The *Imperial Law* against such *disorders* we have in *L. ob. id. si. ad legem Aquill. & in ff. l. 47. Tit. 7. Arborem furtim cesarum*: See also *Triphon L. ig. de Bon. off. cont. tab. vel in ligna focaria. L. Ligni ff. de Lege 3. &c.*

To these I might add the *Laws* of our King *Ina*; or as the Learned *Lambert* calls them, *Αρχαιονομία de priscis Anglorum legibus*, whose Title is, *Be þuþa þapnere*: of *Burning Trees*: The *Sanction* runs thus.

*If any one set fire of a fell'd Wood, he shall be punished, and besides pay three pounds, and for those who clandestinely cut Wood (of which the very sound of the Axe shall be sufficient Conviction) for every Tree he shall be mulcted thirty shillings. A Tree so fell'd under whose shadow thirty Hogs can stand, shall be mulcted at three pounds, &c.*

6. I have heard, that in the great *Expedition* of 88, it was expressly enjoin'd the *Spanish Commanders* of that signal *Armada*; that

that if when landed they should not be able to subdue our Nation, and make good their Conquest; they should yet be sure not to leave a Tree standing in the Forest of Dean: It was like the Policy of the Philistines, when the poor Israelites went down to their Enemies Smiths to sharpen every man his Tools; for as they said, lest the Hebrews make them Swords, or Spears; so these, lest the English build them Ships, and Men of War: Whether this were so, or not; certain it is, we cannot be too jealous for the preservation of our Woods; and especially of those eminent, and, with care, inexhaustible Magazines: I dare not suggest the encouragement of a yet farther restraint, that even Proprietors themselves should not presume to make havock of some of their own Woods, to feed their prodigality, and heap fuel to their vices; but it is worthy of our observation, that (in that inimitable Oration, the second Philippic) Cicero does not so sharply reproach his great Antagonist for any other of his Extravagancies (which yet he there enumerates) as for his wasteful disposure of certain Wood-lands belonging to the Common-wealth, amongst his jovial Bravo's, and lewd Companions; *tua ista detrimenta sunt* (meaning his Debauches) *illa nostra*; speaking of the Timber: and doubtless, the spoil, and wasting of this necessary material is no less than a public calamity; this, John Duke of Lancaster knew well enough, when to revenge the depredations made upon the English borders, 'tis said, he set four and twenty thousand Axes at work at once, to destroy the Woods in Scotland.

7. But to the Laws: it were to be wish'd that our tender, and improvable Woods, should not admit of Cattle, by any means, till they were quite grown out of reach; the Statutes which connive at it, in favour of Custom, and for the satisfying of a few clamorous and rude Commoners, being too indulgent; since it is very evident, that less than a 14. or 15. years enclosure is, in most places, too soon; and our most material Trees would be of infinite more worth and improvement, were the Standards suffer'd to grow to Timber, and not so frequently cut, at the next felling of the Wood, as the general custom is. In 22 Edw. 4. the liberty arriv'd but to seven years after a felling of a Forest or Purlieu; and but three years before, without special licence: This was very narrow; but let us then look on England as an over-grown Country.

8. Wood in Parks was afterwards to be four years Fenced, upon felling: and yearling Colts, and Calves might be put into inclosed Woods after two: By the 13 Eliz. five years, and no other Cattle till six, if the growth was under fourteen years; or until eight, if exceeding that age till the last felling: All which Statutes being by the Act of Hen 8 but temporal, this Parliament of Eliz. thought fit to make perpetual.

9. Then, to prevent the destructive razing, and converting of Woods to Pasture: No wood of two Acres, and above two furlongs from the Mansion House, should be indulg'd: And the prohibitions are good against Assarts made in forests, &c. without licence: The Penalties are indeed great; but how seldom inflicted? and what

what is now more easie, than Compounding for such a licence?

In some parts of *Germany*, where a single *Tree* is observ'd to be extraordinary fertile, a constant, and plentiful *Mast-bearer*; there are *Laws* to prohibit their *felling* without special leave: And it was well *Enacted* amongst us, that even the *Owners* of *woods* within *Chases*, should not cut down the *Timber* without view of *Officers*; this *Act* being in *affirmance* of the *Common Law*, and not to be violated without *Prescription*: See the *Case* cited by my Lord *Cook* in his *Comment on Littleton. Tenure Burgage. L. 2. Sect. 170*. Or if not within *Chases*, yet where a *Common-person* had liberty of *Chase*, &c. and this would be of much benefit, had the *Regarders* perform'd their duty, as 'tis at large described in the *Writ* of the 12 *Articles*; and that the *Surcharge* of the *Forests* had been honestly inspected with the due *Perambulations*, and ancient *Metes*: Thus should the *Justices* of *Eire* dispose of no *Woods* without exprels *Commission*, and in convenient places: *Minuti blaterones quercuum, culi, & curbi*, as our *Law* terms *wind-falls, dotterels, scrags, &c.* and no others.

10. Care is likewise by our *Laws* to be taken that no unnecessary *Imbezilment* be made by pretences of Repair of *Paling, Lodges, Browse* for *Deer, &c. Wind-falls, Root-falls*; dead, and *Sear-trees*, all which is subject to the Inspection of the *Warders, Justices, &c.* and even trespasses done *de Viridi* on boughs of *Trees, Thickets*, and the like; which (as has been shew'd) are very great impediments to their growth and prosperity, and should be duly looked after, and punish'd; and the great neglect of *Swainmote-Courts* reformed, &c. See *Consuet. & Affis. Forest. Pannagium, or Pastura pecorum & de Glandibus, Fleta, &c. Manwoods Forest-lawes: Cook pla. fol. 366. li. 8. fol. 138.*

11. Finally, that the exorbitance, and increase of devouring *Iron-mills* were looked into, as to their *distance*, and *number* near the *Seas*, or *Navigable Rivers*; And what if some of them were even remov'd into another world? 'twere better to purchase all our *Iron* out of *America*, than thus to exhaust our *woods* at home, although (I doubt not) they might be so order'd, as to be rather a means of conserving them. There was a *Statute* made by Queen *Eliz.* to prohibit the converting of *Timber-trees* to *Coal*, or other *Fuel* for the use of *Iron-mills*; if the *Tree* were of one foot square, and growing within fourteen Miles of the *Sea*, or the greater *Rivers, &c.* 'tis pity some of those places in *Kent, Suffex,* and *Surrey* were excepted in the *Proviso*, for the reason exprels'd in a *Statute* made 23 *Eliz.* by which even the employing of any *under-wood*, as well as *great Trees*, was prohibited within 22 miles of *London*, and many other *Navigable Rivers, Creeks*, and other lesser distances from some parts of *Suffex-Downs, Cinque-Ports, Havens, &c.*

There are several *Acres* of *Wood-land* of no mean circuit near *Rocheſter*, in the County of *Kent*, extending as far as *Bexley*, and indeed, for many miles about *Shoters-Hill*, near the *River* of *Thames*, which, were his *Majesty* owner of, might in few years be



be of an *un-valuable Improvement* and benefit, considering how apt they are to grow *Forest*, and how opportune they lye for the use of his *Royal Navy* at *Chatham*.

12. But yet to prove what it is to manage *Woods* discreetly; I read of one Mr. *Christopher Darell* a *Surrey* Gentleman of *Nudigate*, that had a particular *Indulgence* for the cutting of his *Woods* at pleasure, though a great *Iron-Master*; because he so order'd his *Works*, that they were a means of preserving even his *Woods*; notwithstanding those unsatiable *devourers*: This may appear a *Paradox*, but is to be made out; and I have heard my own *Father* (whose *Estate* was none of the least wooded in *England*) affirm, that a *Forge*, and some other *Mills*, to which he furnish'd much *fuel*, were a means of maintaining, and improving his *Woods*; I suppose, by increasing the *Industry* of *Planting*, and care; as what he has now left standing of his own *Planting*, *enclosing*, and *cherishing*, in the possession of my most honoured Brother *George Evelin* of *Wotton* in the same *County*, does sufficiently evince; a most laudable *Monument* of his *Industry*, and rare Example, for without such an Example, and such an *Application*, I am no *Advocate* for *Iron-works*, but a declared *denouncer*: But *Nature* has thought fit to produce this *wasting-Oare* more plentifully in *Woodland*, than any other *Ground*, and to enrich our *Forests* to their own Destruction,

O Poverty, still safe! and therefore found  
Inseparably with Mischiefs under ground!  
Woods tall, and Reverend from all time appear  
Inviolable, where no Mine is near.

O semper bona pauperies! & conditus alta  
Thesaurus tellure nocens! O semper ovariantes,  
Integra, salveque solo non devite Sylva!

Coultii Pl. l. 6.

for so our sweet *Poet* deploras the Fate of the *Forest* of *Dean*.

13. The same *Act* we have Confirmed, and enlarged in the Seventeenth of the said *Queen*, for the preserving of *Timber-Trees*, and the Penalties of impairing *Woods* much increased; the *Tops* and *offals* only permitted to be made use of for this employment.

14. As to the Law of *Tithes*, I find *Timber-Trees* pay none, but others do, both for *Body*, *Branches*, *Bark*, *Fruit*, *Root*, and even the *Suckers* growing out of them; and the Tenth of the *Body* sold, or kept: And so of *Willows*, *Sallows*, and all other *Trees* not apt for *Timber*: Also of *Sylva cadua*, as *Coppces*, and *Under-woods*, pay the tenth when ever the *Proprietor* receives his *nine* Parts. But if any of these we have named un-exempted are cut only for *Mounds*, *Fencing*, or *Plow-boot* within the *Parish* in which they grow, or for the *Fuel* of the *Owner*, no *Tithes* are due, though the *Vicar* have the *Tyth-wood*, and the *Parson* that of the places so inclosed; nor are *Under-woods* grub'd up by the *Roots* *Tythable*, unless for this, and any of the former *cases* there be *Prescription*. But for *Timber-trees*, such as *Oak*, *Ash*, *Elm* (which are accounted *Timber* in all places after the first *twenty* years) also *Beech*, *Hornbeam*, *Maple*, *Aspen*, and even *Hazel* (many of which are in some *Countries* reputed *Timber*) they are not to pay *Tithes*, unless they are fell'd before the said age of *twenty* years from their first *Planting*. Note here,

If

If the Owner fell a *fruit-tree* (of which the *Parson* has had *tythe* that year) and convert the *wood* into *fuel*, the *tythe* shall cease; because he cannot receive the *tythe* of one thing twice in one year.

*Beech*, in Countrys where it abounds, is not *tythable*; because in such places 'tis not accounted *Timber*. 16 *Jac. Co. B. Pinders Case*.

*Cherry-trees* in *Buckinghamshire* have been adjudged *Timber*, and *Tythe-free*. *Pasch. 17 Jac. B. R.*

If a *Tree* be lop'd under twenty years growth, and afterwards be permitted to grow past twenty years, and then be lop'd again, no *tythe* is due for it, though at the first cutting it were not so.

If *wood* be cut for *hedges*, which is not *tythable*, and any be left of it unemploy'd, no *tythe* shall be paid for it.

If *wood* be cut for *Hop-poles* (where the *Parson* or *Vicar* has *tythe* *Hops*) in this case he shall not have *tythe* of *Hop-poles*.

If a great *wood* consist chiefly of *Under-wood Tythable*, and some great *trees* of *Beech*, or the like grow dispersedly amongst them; *Tythe* is due, unless the *Custom* be otherwise, of all both great and lesser together: And in like manner if a *wood* consist for the most part of *Timber-trees*, with some small scatterings of *Under-wood* amongst them, no *Tythe* shall be paid for the *Under-wood* or *Bushes*. *Trin. 19 Jac. B. R. Adjudg. 16 Jac. in C. B. Leonards case.*

No *Tythe* is to be paid of *Common* of *Estovers*, or the *wood* burnt in ones *House*. Now as to the manner of *Payment*:

To give the *Parson* the Tenth Acre of *Wood* in a *Copp'ce*, or the tenth Cord (provided they are equal) is a good payment, and setting forth of *Tythe*, especially if the *Custom* confirm it.

The *Tythe* of *Mast* of *Oak*, or *Beech*, if sold, must be answer'd by the tenth Penny: if eaten by *Swine*, the worth of it. And thus much we thought fit to add concerning *Predial Tythes*; who has desire to be farther informed may consult my *Lord Cook's Rep. 1148, 49, 81. Plow. 470. Brownlows Rep. 1 part 94. 2 part 150. D. and St. 169. &c.* But let us see what others do.

15. The King of *Spain* has near *Bilbao*, sixteen times as many Acres of *Copp'ce wood* as are fit to be cut for *Coal* in one year; so that when 'tis ready to be fell'd, an *Officer* first marks such as are like to prove *Ship-timber*, which are let stand, as so many *sacred*, and *dedicate* *Trees*: But by this means the *Iron-works* are plentifully supplied in the same place, without at all diminishing the stock of *Timber*. Then in *Biscay* again, every *Proprietor*, and other, Plants three for one which he cuts down; and the *Law* obliging them is most severely executed. There indeed are few, or no *Copp'ces*; but all are *Pollards*; and the very *lopping* (I am assur'd) does furnish the *Iron-works* with sufficient to support them.

16. What the practice is for the maintaining of these kind of *Plantations* in *Germany*, and *France*, has already been observ'd to this *Illustrious Society* by the Learned *Dr. Merret*; viz. that the *Lords* and (for the *Crown-lands*) the *Kings Commissioners*, divide the *Woods*, and *Forests*, into eighty partitions; every year felling one

one of the divisions; so as no *wood* is fell'd in less than *four score* years: And when any one *partition* is to be cut down, the *Officer*, or *Lord* contracts with the *Buyer* that he shall at the distance of every *twenty* foot (which is somewhat near) leave a good, fair, sound and fruitful *Oak* standing. Those of 'twixt *forty*, and *fifty* years they reckon for the *best*, and then they are to *fence* these *Trees* from all sorts of *Beasts*, and injuries, for a competent time; which being done, at the *season*, down fall the *Acorns*, which (with the *Autumnal* rains beaten into the earth) take *root*, and in a short time furnish all the *Wood* again, where they let them grow for *four*, or *five* years; and then grub up some of them for *Fuel*, or *Transplantations*, and leave the most *probable* of them, to continue for *Timber*.

17. The *French King* permits none of his *Oak woods*, though belonging (some of them) to *Monsieur* (his *Royal Brother*) in *Appenage*, to be cut down; till his own *Surveyers*, and *Officers*, have first *marked* them out; nor are any *fell'd* beyond such a *Circuit*: Then are they sufficiently *fenc'd* by him who *buys*; and no *Cattel* whatsoever suffer'd to be put in, till the very *seedlings* (which spring up of the *Acorns*) are perfectly out of danger. But *these*, and many other wholsom *Ordinances*, especially, as they concern the *Forest of Dean*, we have comprised in the late *Statute* of the *Twentieth* of his *Majesties* Reign; which I find Enacted *five years* after the first *Edition* of this *Treatise*: And these *Laws* are worthy our perusal; as also the *Statute* prescribing a *Scheme* of *Proportions* for the several scantlings of *Building Timber* (besides what we have already touched *Chap. 31. Sect. 26. &c.*) which you have 19 *Car. 2.* intituled, *An Act for the Re-building of London*; to which I refer the Reader.



## C H A P. XXXIV.

*The Parænesis and Conclusion, containing some Encouragements and Proposals, for the Planting, and Improvement of his Majesties Forests, and other Amœnities for Shade, and Ornament.*

1. *Since our Forests are undoubtedly the greatest Magazines of the Wealth, and Glory of this Nation; and our Oaks the truest Oracles of its perpetuity and happiness, as being the only support of that Navigation which makes us fear'd abroad, and flourish at Home; it has been strangely wonder'd at by some good Patriots, how it comes to pass that many Gentlemen have frequently repair'd, or gain'd a sudden Fortune, with Plowing part of their Parks, and setting out their fat grounds to Gard'ners, &c. and very wild wood-land parcels (as may be instanc'd in several places) to dressers of Hop-yards, &c. while the Royal portion lies folded up in a Napkin, uncultivated, and neglected? especially, those great, and ample Forests; where, though plowing, and sowing has been forbidden, a Royal Command, and Design, may well dispense with it, and the breaking up of those Intervals, advance the growth of the Trees to an incredible Improvement.*

2. *It is therefore insisted on, that there is not a cheaper, easier, or more prompt expedient to advance Ship-timber, than to solicit, that in all his Majesties Forests, Woods, and Parks, the spreading Oak, &c. (which we have formerly described) be cherish'd, by Plowing, and sowing Barley, Rye, &c. (with due supply of culture and Soyl, between them) as far as may (without danger of the Plow-share) be broken up. But this is only where these Trees are arriv'd to some magnitude, and stand at competent distances; a hundred, or fifty yards (for their Roots derive relief far beyond the reach of any boughs) as do the Walnut-trees in Burgundy, which stand in their best Plow'd lands.*

3. *But, that we may particularize in his Majesties Forests of Dean, Sherwood, &c. and in some sort gratifie the Quarries of the Honourable, the principal Officers and Commissioners of the Navy; I am advis'd by such as are every way judicious, and of long experience in those parts; that to enclose would be an excellent way: But it is to be consider'd, that the People, viz. Foresters, and Bordurers, are not generally so civil, and reasonable, as might be wish'd; and therefore to design a solid Improvement in such places, his Majesty must assert his Power, with a firm and high Resolution to reduce these men to their due Obedience, and to a necessity of submitting*

mitting to their *own*, and the *publick* utility; though they preserv'd their *industry* this way, at a very tolerable *rate* upon that *condition*, whiles some *person of trust*, and integrity, did regulate, and supervise the *Mounds* and *fences*, and destine some portions frequently set apart, for the raising, and propagating of *Woods*, till the whole *Nation* were furnish'd for *posterity*.

4. And which *Work* if his *Majesty* shall resolve to accomplish, he will leave such an everlasting *Obligation* on his *People*, and raise such a *Monument* to his *fame*, as the *Ages* for a *thousand* years to come, shall have cause to celebrate his precious *Memory*, and his *Royal Successors* to emulate his *Virtue*. For thus (besides the future expectations) it would in *present*, be no deduction from his *Majesties Treasure*, but some increase; and fall in time to be a fair and worthy *Accession* to it; whiles this kind of *propriety* would be the most likely expedient to *civilize* those wild and poor *Bordurers*; and to secure the vast and spreading heart of the *Forest*, which with all this *Indulgence*, would be ample enough for a Princely *Demeasnes*: And if the difficulty be to find out who *knows*, or *acknowledges* what are the *Bordures*; this *Article* were worthy, and becoming of as serious an *Inquisition*, as the *Legislative Power* of the whole *Nation* can contrive.

5. The Sum of all, is; get the *Bordures* well *Tenanted*, by long *Terms*, and easie *Rents*, and this will invite and encourage *Takers*; whilst the *middle*, most secure, and interior parts would be a *Royal portion*. Let his *Majesty* therefore admit of any willing *Adventurers* in this vast *Circle* for such *Enclosures* in the *Precincts*; and rather of *more*, than of *few*, though an *hundred* or *two* should joyn together for any *Enclosure* of *five hundred Acres* more, or less; that *multitudes* being thus engaged, the consideration might procure, and facilitate a full *discovery* of latter *Encroachments*, and fortifie the recovery by favourable *Rents*, *Improvements*, and *Reversions* by *Copy-hold*, or what other *Tenures* and *Services* his *Majesty* shall please to accept of.

6. Now for the Planting of *Woods* in such places (which is the main Design of this whole *Treatise*) the *Hills*, and rough *Grounds* will do well; but they are the rich fat *Vales*, and *flats* which do best deserve the charge of *walls*; such as that *spot* affords; and the *Haw-thorn* well plash'd (single or double) is a better, and more natural *fence*, than *unmorter'd walls*, could our *industry* arrive to the making of such as we have describ'd: Besides, they are lasting, and profitable; and then one might allow sufficient *Bordure* for a *Mound* of any thickness, which may be the first charge, and well supported, and rewarded by the culture of the Land thus enclosed.

7. For Example, suppose a man would take in *500 Acres* of good Land, let the *Mounds* be of the wildest ground, as fittest for *woods*: Two *hedges* with their *Vallations*, and *Trenches* will be requisite in all the Round; viz. one next to the *Enclosure*, the other about the *Thicket* to fence it from *Cattle*: This, between the two *hedges* (of whatsoever breadth) is fittest for *Plantation*: In these *Hedges*

might be tryed the Plantation of *Stocks*, in the *intervals* all manner of *wood-seeds* sown (after competent *Plowings*) as *Acorns*, *Mast*, *Fir*, *Pine*, *Nuts*, &c. the first year chasing away the *Birds*, because of the *Fir* and *Pine* Seeds, for reasons given: the second year loosning the ground, and thinning the supernumeraries, &c. this is the most frugal way: Or by another *Method*, the *waste* places of *Forests* and *Woods* (which by through experience is known and tried) might be perfectly cleansed; and then allowing two or three *Plowings*, well rooted *Stocks* be set, cut and trimm'd as is requisite; and that the *Timber-trees* may be excellent, those afterwards *Coppiced*, and the choicest *Stocks* kept threaded. If an *Enclosure* be sow'd, the *Seeds* may be (as was directed) of all the *species*, not forgetting the best *Pines*, *Fir*, &c. Whiles the yearly removal of very incumbrances only, will repay the *Workmen*, who sell the *Quick*, or reserve it to store other *Enclosures*, and soften the circumjacent grounds, to the very great improvement of what remains.

8. And how if in such *fencing-works*, we did sometimes imitate what *Quintus Curtius*, lib. 6. has Recorded of the *Mardorum gens*, near to the Confines of *Hyrcania*, who did by the close Planting of *Trees* alone upon the *Bordures*, give so strange a check to the Power of that great Conqueror *Alexander*? They were a *barbarous* People indeed, but in this worthy our imitation; and the Work so handsomly, and particularly describ'd, that I shall not grieve to recite it. *Arbores dense sunt de industria confite, quarum teneros adhuc ramos manu flectunt, quos intortos rursus inferunt terre: Inde, velut ex alia radice latiores virent trunci: hos, qua natura fert, adolescere non sinunt; quippe alium alii, quasi nexu conferunt: qui ubi multa fronde vestiti sunt, operiunt terram. Itaque occulti ramorum velut laquei perpetua sepe iter claudunt, &c.* The *Trees* (saith he) were Planted so near and thick together of purpose, that when the boughs were yet young and flexible, bent, and wreath'd within one another, their Tops were bowed into the earth (as we *submerge our Layers*) whence taking fresh roots, they shot up new stems, which not being permitted to grow as of themselves they would have done, they so knit, and perplex'd one within another, that when they were clad with leaves, they even cover'd the ground, and enclosed the whole Country with a kind of living net, and impenetrable hedge, as the *Historian* continues the description; and this is not unlike what I am told is frequently *practis'd* in divers places of *Devon*; where the *Oaks* being planted very near the foot of those high *Mounds* by which they separate their *Lands*, so *Root* themselves into the *Bank*, that when it fails and crumbles down, the *Fence* continues still maintain'd by them with exceeding profit. Such works as these would become a *Cato*, or *Varro* indeed, one that were *Pater Patrie*, non sibi soli natus, born for Posterity; but we are commonly of another mould,



— & fruges consumere nati.

9. A fair advance for speedy growth, and noble *Trees* (especially for *Walks* and *Avenues*) may be assuredly expected from the *Grafting* of young *Oaks*, and *Elms* with the best of their kinds; and where the goodliest of these *last* are growing, the ground would be *plow'd*, and finely *raked* in the season when the *Scales* fall; that the showres and dews fastning the *Seed* where the wind drives it, it may take *Root*, and hasten (as it will) to a sudden *Tree*; especially, if seasonable *shreading* be appli'd, which has sometimes made them arrive to the height of *Twelve* foot by the first *three* years, after which they grow amain. And if such were planted as near to one another as in the *Examples* we have alledg'd, it is almost incredible, what a *paling* they would be to our most expos'd *Plantations*, mounting up their wooden *walls* to the clouds: And indeed the shelving, and natural declivity of the *Ground* more or less to our unkind *Aspects*, and bleak *Winds*, does best direct to the *thickning* of these protections; and the benefit of *that*, soon appear, and recompence our industry in the smoothness, and integrity of the *Plantations* so defended.

10. That great care be had of the *Seeds* which we intend to sow has been already advised; for it has been seen, that *Woods* of the same *age*, planted in the same *soil*, discover a visible difference in the *Timber* and *growth*; and where this variety should happen, if not from the *seed*, will be hard to interpret; therefore, let the *place*, *soil* and *growth* of such *Trees* from whence you have your *seeds*, be diligently examin'd; and why not this, as well as in our care of *Animals* for our breed and store?

11. As to the *Form*, obey the natural *site*, and submit to the several guizes; but ever declining to enclose *High-ways*, and *Common-Roads* as much as possible. For the rest, be pleas'd to reflect on what we have already said, to encourage the *Planting* of the large spreading *Oak* above all that *species*; the amplitude of the *distance* which they require resign'd to the care of the *Verderer* for grazing *Cattle*, *Deer*, &c. and for the great and masculine beauty which a wild *Quincunx*, as it were, of such *Trees* would present to your eye.

12. But to advance his *Majesties Forests* to this height of perfection, I should again urge the removal of some of our most mischievously plac'd *Iron-mills*; if that at least be true which some have affirm'd, that we had better *Iron*, and cheaper from *Foreigners*, when those *Works* were strangers amongst us. I am inform'd, that the *New-English* (who are now become very numerous, and hindred in their advance and prospect of the *Continent* by their surfeit of the *Woods* which we want) did about *twelve* years since, begin to clear their *High-ways* by two *Iron-mills*: I am sure their zeal has sufficiently wasted our stately *Woods*, and *Steel* in the bowels of their *Mother* old *England*; and 'twere now but expedient, their *Brethren* should hasten thither to supply us with *Iron* for the peace  
of

of our days; whilst his *Majesty* becomes the great *Sovereign* of the *Ocean*, free *Commerce*, *Nemorum Vindex & Inſtaurator magnus*. This were the only way to render *both* our *Countries habitable* indeed, and the fittest *Sacrifice* for the *Royal Oaks*, and their *Hamadryads* to whom they owe more than a sleight submission: And he that should deeply consider the prodigious waste which these voracious *Iron*, and *Glass-works* have formerly made but in *one County* alone, the *County of Sussex*, for *120 Miles* in length, and *thirty* in breadth (for so wide, and spacious was the antient *Andradswald*, of old one intire *Wood*, but of which there remains now little, or no sign) would be touch'd with no mean *Indignation*: Certainly, the goodly *Rivers* and *Forests* of the other *World*, would much better become our *Iron*, and *Saw-mills*, than these exhausted *Countries*; and we prove gainers by the timely removal: I have said this already, and I cannot too often inculcate it for the Concerns of a *Nation*, whose only Protection (under *God*) are her *Wooden Walls*.

13. Another thing to be recommended (and which would prove no less than *thirty* years, in some places *forty*, and generally *twenty* years advance) were a good (if well executed) *Ax* to save our *Standards*, and *bordering Trees* from the *Ax* of the Neighbourhood: And who would not preserve *Timber*, when within so few years the price is almost quadrupl'd? I assure you *standards* of *twenty*, *thirty*, or *forty* years growth, are of a long day for the Concernments of a *Nation*.

14. And though we have in our general *Chapter* of *Copp'ces*, declar'd what by our *Laws*, and common *usage* is expected at every *Fell* (and which is indeed most requisite, till our store be otherwise supply'd) yet might much even of that rigor be abated, by no unfrugal permissions to take down more of the *Standards* for the benefit of the *Under-woods* (especially where, by *over-dropping*, and *shade* they interrupt the kindly *Dews*, *Rains*, and *Influences* which nourish them) provided that there were a proportionable number of *Timber-trees* duly and thoroughly Planted, and preserved in the *Hedge-rows* and *Bordures* of our grounds; in which case, even the total *clearing* of some *Copp'ces* would be to their great advance, as by sad experience has been taught some good *Husband*s, whose necessities sometimes forced them to violate their *Standards*, and more grown *Trees* during the late *Tyranny*.

15. Nor will it be here unreasonable to advise, that where *Trees* are manifestly perceiv'd to *decay*, they be marked out for the *Ax*, that so the *younger* may come on for a supply; especially, where they are chiefly *Elms*; because their *successors* hasten to their height and perfection in a competent time; but beginning once to grow sick of *Age*, or other infirmity, suddenly impair; and lose much of their value yearly: besides, that the increase of *this*, and other speedy *Timber*, would spare the more *Oak* for *Navigation*, and the sturdier uses.

How goodly a sight were it, if most of the *Demesnes* of our *Country Gentlemen* were crown'd and incircled with such stately rows

rows of *Limes*, *Firs*, *Elms*, and other ample, shady and venerable *Trees* as adorn *New-Hall* in *Essex*, the Seat of that *Suffolk Knight* near *Tarmouth*, our neighbouring Pastures at *Barnes*; with what has been planted of later years by the Illustrious *Marquis of Worcester*; the most accomplish'd *Earl of Essex*; and even in less fertile *Soils*, though purer air at *Euston*, by the Right honourable the *Earl of Arlington*, Lord Chamberlain of his Majesty's Household: and at *Cornberry* by the late Lord Chancellor the *Earl of Clarendon*; and is done, nearer this Imperial City, by the noble *Earl of Danby*, Lord High Treasurer of England, at his seat in *Wimbledon*; and above all, his Sacred Majesty, in his Parks of *Greenwich*, *S. James's*, *Hide-Parke*, *Hampton-Court* and *Windsor*, leading the way to these glorious Heroes; and yet were these Plantations but of late years in comparison: It were a noble, and immortal providence to imitate these good *Husbands* in the largest, and more august Plantations of such useful *Trees*, for *Timber* and *Fuel*, as well as for *Shade*, and *Ornament* to our Dwellings.

It is here therefore great Persons would be incited by all the rules and Methods imaginable, to adorn their goodly Seats, and Mansions with stately Walks and Avenues, their Groves, Parks, and Woods with Trees of the most venerable Shade, and profitable Timber, and to Cut, and dispose those ampler Enclosures into Lawns, and Ridings for exercise, health, and Prospect, and for which I should here presume to furnish some directions, were it not already done to my hand by the often cited Mr. Cooke, in that useful work of his; where, in Chapter the 38th, he has laid down all that I can conceive necessary, by measures exactly taken from the middle-line of any front, following the center stake, if it be for a Walk: He there determines the wideness of the walk, according to its length, as 40 Foot to one of half a mile; if more, 50 or 60; and if you withal desire shade, that then you should make 3 walks, the two collaterals 30 Foot broad, to a middle one of 40.25 to 50, so that the middle be as wide as both the other: He likewise shews how proper it is that Walks should not terminate abruptly, but rather in some capacious, or pretty figure, be it Circle, Oval, Semi-Circle, Triangle, or Square, especially in Parks, or where they do not lead into other Walks; and even in that case, that there may gracefully be a Circle to receive them: There he shews how to pierce a Walk through the thickest Wood either by stakes set up where they may be seen to direct; or by Candle and Lantern, in a calm night, &c. He also gives the distances of the Trees in relation to each other, according to the species, and shews how necessary it is, to plant them nearer in those Ovals, Circles, and Squares, &c. for the better distinction of the Figures, suppose to half the distance of that of the Walks, and proportionable to the amplitude, or smallness thereof: As for Lawns, he advises that they should (if possible) be contriv'd on the South or East side of the Seat and Mansion, for avoiding the impetuosity of Western winds; and that your best Rooms may front those Lawns and openings, and to skreen from the occidental and after-noon sun which



which also hinders *Prospect*: A *Lawn* on the *North*, exposes the *House* to that piercing quarter, and therefore it would be well defended with the tallest *Trees*: For the figure he commends the *square*, with three *Avenues* breaking out at the three *Angles*, or one at the *Angle* opposite to the *House*, and these *Lawns* may be bounded with *walks*, or a single row of *Lime-trees* at competent distance, to which I add, the *Circle* with a *star* of *Walks* radiating from it likewise exceeding pleasant; such as the Right Honourable the *Earl of Winchester* has cut out at his noble seat in *Kent*: It were likewise graceful where *Houses*, and great persons build among *Wood*, that an ample *square* or *semi-circle* were voided before the *Front*; and for all these varieties of *Walks*, *Glades* and *Lawns*, the stately *Elm*, spreading *Oak*, beautiful *Lime*, umbragious *Platan*, *Beech*, *Walnut*, *Chestnut*, *Pines* and *Firs* where they will grow, not omitting the *Black-cherry*, are proper to be planted, kept, and govern'd skilfully; and what if *Tew*, or *Holly*, made an *Hedge* from *Tree* to *Tree* in some places for diversity, leaving a *knob*, *pyramide*, or *standard* in the middle for variety; especially about the *Area* next the *House*, and in some of those *Figures* and openings at the period of *Walks* and *Lawns*, it is not to be imagin'd how suprisingly noble it would shew, they being not only *ever-greens* but *touffe*, and hardy against all invasions of *weather* or *Cattel*; and will infallibly thrive under the shade of the larger *Trees*, which neither *Juniper* nor *Cypress* will indure.

16. But these incomparable *Amenities* and undertakings will best of all become the *Inspection* and care of the noble *Owners*, *Lieutenants*, *Rangers*, and ingenious *Gentlemen* when they delight themselves as much in the goodliness of their *Trees*, as other men generally do in their *Dogs*, and *Horses*, for *Races*, and *Hunting*; neither of which *Recreations* is comparable to that of *Planting*, either for *Virtue*, or *Pleasure*, were things justly consider'd according to their true estimation: Not yet that I am of so morose an *humour*, that I reprove any of those noble, and manly *Diversions*, seasonably us'd; but because I would court the *Industry* of great and opulent persons, to profitable, and permanent *delights*: For, suppose that *Ambition* were chang'd into a laudable *emulation*, who should best, and with most artifice, raise a *Plantation* of *Trees*, that should have all the proper *Ornaments*, and *perfections* their nature is susceptible of, by their direction and encouragement; such as *Ælian* sums up *lib. 3. c. 14.* *ὀφθαλμοὶ καλὰ δὲ, καὶ ἡ κορμὴ πολλή*, &c. kind, and gentle *Limbs*, plenty of large *leaves*, an ample, and fair *body*, profound, or spreading *Roots*, strong against impetuous *Winds* (for so I affect to read it) extensive, and venerable *shade*, and the like: Methinks there were as much a subject of *Glory* as could be phancied of the kind; and comparable, I durst pronounce, *preferable*, to any of their *Recreations*; and how goodly an *Ornament* to their *Demiesnes* and *Dwellings*, let their own eyes be the judges.

17. One *Encouragement* more, I would reinforce from an *Historical* I have read of a certain frugal, and most Industrious *Italian Noble-man*,

ble-man, who, after his *Lady* was brought to Bed of a *Daughter*, considering that *Wood* and *Timber* was a *Revenue* coming on whilst the *Owners* were *asleep*; commanded his *Servants* immediately to Plant in his *Lands* (which were ample) *Oaks*, *Ashes*, and other profitable, and *Marketable Trees*, to the number of an *Hundred thousand*; as undoubtedly calculating, that *each* of those *Trees* might be worth *twenty pence*, before his *Daughter* became *Marriageable*, which would amount to *100000 francs* (which is near *ten thousand pound Sterling*) intended to be given with his *Daughter* for a *Portion*. This was good *Philosophy*, and such as I am as- sur'd is frequently practis'd in *Flanders* upon the very same account: Let us see it once take effect amongst our many slothful *Gentry*, who have certainly as large *Demefnes*, and yet are so deficient in that decent point of *timely* providing for their numerous *Children*: And those who have *none*, let them the rather *Plant*: *Trees* and *Vegetables* have perpetuated some *Names* longer, and better than a *Pedigree* of a numerous *Off-spring*; and it were a pledge of a *Noble Mind*, to oblige the future *Age* by our particular *Industry*, and by a long lasting train, with the *living work* of our own hands: But I now proceed to more general *Concerns*, in order to the *Queries*, and first to the *proportion*.

18. It were but just, and infinitely befitting the miserable needs of the whole *Nation*, that every *twenty Acres* of *Pasture*, made an allowance for *half an Acre* of *Timber*; the *Ground* dug about *Christ-mas*, casting the *Grassy-side* downwards till *June*, then dug again, and about *November* stir'd afresh, and sown with *Mast*, or planted in a *clump*, well preserv'd, and fenc'd for *14*, or *15* years; unless that *sheep* might haply *Graze* after *4* or *5* years: And where the young *Trees* stand too *Thick*, there to *draw*, and *transplant* them in the *Hedge-rows*, which would also prove excellent *shelter* for the *Cattel*: This *Husbandry* would more especially become *North-hamptonshire*, *Lincolnshire*, *Cornwall*, and such other of our *Coun-tries* as are the most naked of *Timber*, *Fuel*, &c. and unprovided of *covert*: For it is rightly observ'd, that the most *fruitful places*, least abound in *wood*, and do most stand in need of it.

**Example by Leicestershire,**

What soil can be better than that  
For any thing heart can desire?

And yet doth it want ye see what:

**Mast, Covert, close pasture, and Wood,**  
And other things needfull, as good.

2.

Doze plenty of **Button** and **Beef,**

**Eggs, Butter, and Cheese** of the best,

Doze wealth any where (to be brief)

Doze people, more handsom, and prest,

I i

Where

Where find ye (go, search any coast)  
Than there where Inclosure is most?

3.

Doze work for the labouring man,  
As well in the Cotton as the Field;  
Or thereof (debase, if ye can)  
Doze profit what Countries do yield?  
Doze seldom where see ye the pooz  
So begging from dooz to dooz?

4.

In Wood-land the pooz men that have  
Scarce fully two Acres of Land,  
Doze merrily live, and do save  
Than t'other with twenty in hand;  
Yet pay they as much for the two  
As t'other for twenty must do.  
If this same be true, as it is,  
Why gather they nothing by this?

Thus honest *Tusser* an hundred years since, and the whole age has justified it, since 'tis evident, that by *Inclosure*, and this diligent *Culture*, the very worst land of *England* would yield ten fold more profit, than that which is here celebrated for the best and richest spot of it.

19. Such as are ready to tell ye their *Lands* are so wet, that their *Woods* do not thrive in them; let them be converted to *Pasture*; or bestow the same industry on them which good *husbands* do in *Meadows* by *draining*: It is a slothfulness unpardonable; as if the *pains* would not be as fully recompenc'd in the growth of their *Timber*, as in that of their *grass*: Where poor hungry *Woods* grow, rich *Corn*; and good *Cattle* would be more plentifully bred; and it were beneficial to convert some *Wood-land* (where the proper vertue is exhausted) to *Pasture* and *Tillage*; provided, that fresh land were improved also to *wood* in recompence, and to balance the other.

20. Where we find *alginous* and starv'd places (which sometimes obey no Art or Industry to *drain*, and of which our pale and fading *Corn* is a sure indication) we are as it were courted to obey *Nature*, and improve them for the propagation of *Sallows*, *Willows*, *Alders*, *Abele*, *Black-cherry*, *Sycomore*, *Aspine*, *Birch*, and the like halty, and profitable growers, by ranging them, casting of *Ditches*, *Trenches*, &c. as before has been taught.

21. In the mean while, 'tis a thing to be deplor'd, that some persons bestow more in *grubbing*, and dressing a few *Acres* which have been excellent *Wood*, to convert them into wretched *pasture*, not worth a quarter of what the *Trees* would have yielded, well order'd,



der'd, and left standing; since it is certain, that *barren land* planted with *wood*, will *trebble* the *expence* in a short time. Of this, the *Right Honourable* the *Lord Viscount Scudamor* may give fair proof, who having *fell'd* (as I am credibly inform'd) a decay'd *Wood*, intended to be *set* to *Tenants*; but upon second thoughts (and for that his *Lordship* saw it apt to cast *Wood*) *enclos'd* and *preserv'd*; it yielded him, before thirty years were *expir'd*, near 1000 pound upon *Wood-Fall*; whereas the utmost *Rent* of the whole price of *Land yearly*, was not above 8 pound 10 shillings. The like I am able to confirm by instancing a *noble Person*, who (a little before our unhappy *Wars*) having sown three or four *Acres* with *Acorns*, the fourth year *transplanted* them which grew too thick all about his *Lordship*: These *Trees* are now of that *stature*, and so likely to prove excellent *Timber*, that they are already judg'd to be almost as much worth as the whole *Demefnes*; and yet they take off nothing from other *profits*, having been discreetly dispos'd of at the first *designment*. And supposing the *Longevity* of *Trees* should not extend to the *Periods* we have (upon so good account) produc'd; Yet, neither is their arrival to a very competent *perfection*, so very *discouraging*; since I am credibly inform'd, that several *Persons* have *built* of *Timber* (and that of *Oak*) which were *Acorns* within this *forty years*; and I find it credibly reported, that even our famous *Forest of Dean*, hath been utterly *wasted* no less than *three* several times, within the space of *Nine-hundred years*. The *Prince Elector Frederic IV*, in the year 1606. sow'd a part of that most barren *Heath of Lambertheim*, with *Acorns* after *plowing*, as I have been inform'd; it is now likely to prove a most goodly *Forest*, though all this while miserably neglected by reason of the *Wars*. For the care of *Planting Trees*, should indeed be recommended to *Princes* and *great Persons*, who have the *Fee* of the *Estate*; *Tenants* upon the *Rack* by reason of the tedious expectation; and jealousy of having their *Lands* enhanc'd, are for the most part averse from this *Husbandry*; so that unless the *Land-Lord* will be at the whole *Charge* of *Planting*, and *Fencing* (without which as good no *Planting*) little is to be expected; and whatsoever is propos'd to them above their usual course, is look'd upon as the *whim* and fancy of *speculative Persons*, which they turn into *ridicule* when they are applied to *Action*; and this, (says an ingenious and excellent *Husband* whose *Observations* have afforded me no little treasure) might be the reason, why the prime *Writers* of all *Ages*, endeavour'd to involve their *Discourses* with *Allegories*, and *Ænigmatical* terms, to protect them from the contempt, and pollution of the *Vulgar*, which has been of some ill Consequence in *Husbandry*; for that very few *Writers* of worth, have adventured upon so plain a *Subject*, though doubtless to any *Considering Person*, the most *Delightful* kind of *Natural Philosophy*, and that which employs the most useful part of the *Mathematics*.

The *Right Honourable* my *Lord Viscount Mountague* has *Planted* many thousands of *Oaks*, which I am told, he draws out of

*Copp'ces*, big enough to defend themselves; and that with such success, as has exceedingly improv'd his *Possessions*; and it is a worthy *Example*. To conclude, I can shew an *Avenue* Planted to a House standing in a barren *Park*, the Soil a cold *Clay*; it consists totally of *Oaks*, one hundred in number: The person who first set them (dying very lately) lived to see them spread their *branches* 123 foot in compass, which at distance of 24 foot, mingling their *shady tresses* for above 1000 in length, form themselves into one of the most venerable, and stately *Arbor-walks*, that in my life I ever beheld: This is at *Baynards* in *Surrey*, and belonging lately to my most honor'd Brother (because a most industrious *Planter* of Wood) *Richard Evelyn* Esq; since transplanted to a better world: The Walk is broad 36 foot, and one Tree with another containing by estimation three quarters of a load of *Timber* in each Tree, and in their *tops* three *Cords* of fire-wood: Their *Bodies* are not of the tallest, having been topped when they were young, to reduce them to an uniform height; yet is the *Timber* most excellent for its scantling, and for their *heads*, few in *England* excelling them: where some of their contemporaries were planted single in the *Park* without cumber, they spread above four score foot in arms.

22. But I have some few *Instances* to superadd, of no mean *Encouragement*, before I dismiss my Reader, because they are so very pregnant and authentick: Sir *Tho. Southwel*, after he had sold, and sell'd all the *Timber*, and *Under-wood* in a certain parcel of Land lying in *Carbrook*, in the County of *Norfolk*, call'd by the name of *Latimer Wood*, containing 80 Acres (now, as I understand, belonging to Sir *Rob. Clayton* Knight) granted a *Lease* of the said Ground, with other Land, to one *Tho. Wastney* (the Father) with liberty to grub and stub-up all the *Wood* and *Stub-shoots* remaining, and to clear the said Ground for *Pasture* or *Tillage*, as he should think to be most for his Profit and advantage; Accordingly he puts out the same to *Labourers* to *Stub*, and *clear*; but was it seems, perswaded by one of them, to preserve some of the young *Stands* or *Saplings* then growing there, as that which might be of greater emolument to him before the expiration of the *Lease*, than if he should quite extirpate them, and convert the said Ground to *Tillage*: These *Saplings* were then so small, as when it happen'd that any of the *Labourers* did break the *hast* of his *Mattock*, he could hardly find one amongst them, big enough to make another of for his present use: Nay when the said *Labourers* had made an end of clearing the Ground of the old *Stub-shoots*, upon which the *Timber* and *under-Wood* did grow (which is now 30 years since) there was not a Tree left growing in it, that could be valued at above Three Pence to be sell'd for any use or service: About the year 1650, the Estate being then come (after the death of Sir *Rich. Crane* Knight) to *William Crane* Esq; and the *Lease* of the same to *Tho. Wastney* (the Son) he offered 500 of the best of the said young *Oak-Saplings* to one *Daniel Hall* (a dealer in *Timber*) for two-Shillings and Six-pence the Tree; which he refusing to give, the said *Tho. Wastney*, making his application to

Mr. Crane

Mr. Crane above mention'd (then owner of the *Estate*) and desiring *Daniel Hall* to acquaint him what pity it was to cut-down such young, and thriving *Trees*; Mr. Crane was perswaded to allow the said *Tho. Wastney* fourscore pounds, and to let them stand; since which time, the said Mr. Crane sold as many of those *Trees* and *Saplings*, as came to about forty pounds, and left growing, and remaining on the Ground about 1380 *Trees*; which, in August 1675 being (upon the desire of Mr. Crane) valued by the said *Daniel Hall*, were estimated to be worth 700 *l.* himself since offering for some of the said *Trees* 40 and 50 *Shillings* a *Tree*; 500 of them being better worth than 500 *l.* Now the said *Latimer Wood* were it clear'd of the *Timber*, would not be let for above four, or five *Shillings* per *Acre* at the most. The particulars of this *History* I received under the hands, and *Certificates* of the above mention'd *Daniel Hall*, who is the *Timber Merchant*, and two of the *Stubbers* or *Labourers* (yet living) that were employ'd to clear the Ground. I have likewise transmitted to me this account from Mr. Sharp, under the hand of *Robert Deye Esq;* one of his *Majesties Justices* of the Peace for the *County of Norfolk* as followeth.

There were in 1636. an hundred *Timber Trees* of *Oak*, growing on some Grounds belonging then to *Thomas Day* of *Scopiton* in the *County of Norfolk Esq;* which were that year sold to one *Rob. Bowgeon* of *Hingham* in the said *County*, for 100 *l.* which price was believed to equal, if not to surmount their intrinsic worth, and value; for, after Agreement made for them, a *Refusal* happening (which continu'd the *Trees* standing till the Year 1671) those very *Trees* were sold to *Tho. Ellys* of *Wundham* (*Timber Master*) and one *Hen. Morley*, *Carpenter*, by Mr. Day (Son of the said *Thomas Day Esq;*) for 560 *l. pounds*: And this comes to me Attested under the hand of *Esquire Day* himself, dated 4 May 1678.

From the same Mr. Sharp I receive this Instance of an *Ash* planted by the hands of one Mr. *Edm. Salter* in that *County*, which he sold for 40 *s.* before his death, but this is frequent.

I am likewise assur'd that three *Acres* of barren land, sown with *Acorns* about 60 years since, and now become a very thriving *Wood*, the improvement of those few *Aeres* amounts to 300 *l.* more than the *Rent* of the *Land*, and what it was before worth to be sold: Once more and I have done.

Upon the *Estate* of *George Pitt Esq;* of *Stratfeildsea* in the *County of Southampton*, a Survey of *Timber* being taken in the year 1659, it came to 10300 *l.* besides near 10000 *Samplers* not valu'd, and growing up naturally: Since this, there hath been made by several *Sales* 5600 *l.* and there has been fell'd for *Repairs*, *Building* and necessary *Uses* to the value (at the least) of 1200 *l.* so as the whole falls of *Timber* amount to 6800 *l.* The *Timber* upon the same Ground being again Survey'd Anno 1677, appears to be worth above 21000 *l.* besides 8, or 9000 *Samplers*, and young *Trees* to be left standing, and not reckon'd in the Survey: but what



what is yet to be observ'd. most of this *Timber* above mention'd, being *Oak*, grows in *Hedg-rows*, and so as that the standing of it, does verry little prejudice to the *Plow* or *Pasture*.

It is likewise affirm'd, that upon a *Living* in the same place, of about forty pound *per An. Rent*, there was (by an *estimation* taken in the year, 1653.) three hundred thirty eight young *Timber Trees* valu'd at fifty nine pound; the *Saplings* at thirty one pound fourteen shillings: And upon a later *Survey* taken the last year 1677; the worth of the *Timber* on that *Living*, is valu'd at above eight hundred pound, besides four or five hundred young thriving *Trees*, which have since the *Survey* in 1653. grown naturally up, not reckon'd in this *Accompt*. With such, and the like *Instances*, coming to me from *Persons* and *Gentlemen* of unquestionable *credit* (dispers'd through several other *Counties* of this *Nation*) I might furnish a just *Volume*; and I have produced these *Examples*, because they are *conspicuous*, full of *encouragement*, worthy our *imitation*; and that from these, and sundry others which I might enumerate, we have made this *Observation*, that almost any *Soil* is proper for some profitable *Timber-Trees* or other, which is good for very little else.

23. Besides *Common pasture* which has long been fed, and is the very best, *Meadow*, that is *up-land* and rich, and such as we find to be naturally *Wood-seere* (as they term it) the bottoms of *Dowms*, and like places well *Plow'd*, and *sown* will bear lusty *Timber*, being *broken up*, and let lie till *Midsummer*, and then *stirr'd* again before *sowing* about *November*.

Mr. *Cooke* directions are these: Prepare as for *sowing* of *Barly*, about *February* scatter your seeds: If you *Plow* your ground into great *Ridges*, the thickness of the Earth on the top will afford more depth and nourishment for the *Roots*, and the furrows being filled up with leaves, when rotten, will lead the *Roots* from one ridge to another: In dry ground *Plow* the ridges cross the descent, not to *drain* but keep the water on the ground, but in wet lands, contrary: This I hold to be an excellent note: He conceives the *Barly* season to be of the latest to sow your *Seeds*, but with *Oats* it does well, so you sow them not too thick; but 'tis best of all to sow them by themselves without any *Crop* of *Grain* at all.

A more expeditious way is to plant with *Sets*, making *holes* or *fosses* (which are best) two foot wide, and deep, and about half a *Rod* distant, viz. four in every *Rod* square, two *Sets* in each hole, sowing your *Keys* and *Seeds* among them the ensuing *Spring*, and that continu'd as oft as you find *Stampings* and *Keys* to be had, even till your *Wood* be perfectly furnish'd, only taking care that they lie not long too thick, because it will heat, and burn the *Kernels*, and therefore let them be put into the ground as soon as they are press'd, or else lay them thin or parted with *straw*.

In case your land be poor and wanting depth, or but indifferent, observing the posture of your ground, divide it into four *yards* distance at both extrems, by small *stakes*, making rows of them by setting up some few between them to direct, and lay your work straight,

straight, ploughing one *yard* of each side of the *stakes*, if the ground be *Green-sward* for the easier running of the *Roots*: Having thus plough'd two *yards*, and left two unplow'd through your whole piece some short time before planting season, so soon as the fall of the leaf begins; Dig up the unplow'd *interstices*, laying one half of the Earth on the unplow'd pieces, and the other half upon the rest, and as you do this, plant your prepared *Sets* about a *yard* distant, with store of *Sallow*, or other *Cuttings* with them, digging that ground which you laid on the plow'd part a good *Spade* deep, which will make it near a foot thick to plant your sets in: Thus proceed from one unplow'd ground to another till all of it is planted: Two men on each side of the *Ridges*, will soon dispatch the work, which would be finish'd by the later end of *January*, which is the best time for the sowing your *Keys*, *Nuts*, and other *Seeds*, unless the weather be frosty, in which case you may a little defer it: And when all is sow'd, cover them a little with the shovelings of some ditches, pond, or other stuff, as an assured good way to improve such *Grounds* to considerable advantage.

For the Planting of *Walnuts*, *Chestnuts*, *Cider-Apples* or any other *Forest*, or *Fruit-Tree* in open fields, Mr. *Cook* directs how the *Triangular* form exceeds all the rest for beauty, and advantage: I refer you to his 33 *Chap.*

An old, and judicious Planter of *Woods*, prescribes us these *Directions*, for improving of *Sheep-walks*, *Downs*, *Heaths*, &c. Suppose, on every such *Walk* on which 500 *Sheep* might be kept, there were Plow'd up twenty *Acres* (Plow'd pretty deep, that the *Roots* might take hold, and be able to resist the *Winds*) this should be sowed with *Mast* of *Oak*, *Beech*, *Chats* of *Ash*, *Maple keys*, *Sloes*, *Service-berries*, *Nuts*, *Bullis*, &c. bruised *Crabs* and *Haws*; mingled and scatter'd about the sides and ends of the *Ground*, near a *yard* in breadth. On the rest sow no *Haw*, but some few *Crab-kernels*: Then begin at a *side*, and sow five *yards* broad, Plowing under the *Mast*, &c. very shallow; then leave six *yards* in breadth, and sow, and Plow five *yards* more, and so from side to side; remembering to leave a *yard* and *half* at the last side; let the rest of the *head-lands* lie, till the remainder of the *Glose* be sown in *March* with *Oats*, &c. to preserve it from hurt of *Cattel*, and potching the *Ground*; when the *Spring* is of two years growth, draw part of it for *Quick-fets*; and when the rest of the *Trees* are of six years shoot, exhaust it of more; and leave not above forty of either side, each row five *yards* distant; and *hove*, and *there* a *Crab-stock* to graff on, and in the invironing *Hedge* (to be left thick) let each *Tree* stand four *yards* asunder; which if forty four were spared, will amount to about 4000 *Trees*: At twenty years end stock up 2000 of them, lop a thousand more every ten years, and reserve the remaining thousand for *Timber*: Judge what this may be worth in a short time, besides the *Grass*, &c. which will grow the first six or seven years, and the benefit of shelter for *Sheep* in ill Weather, when they cannot be folded; and the *Pasture* which will be had under the *Trees*, now at eleven *yards interval*, by reason  
of

of the *stocking* up those 2000 we mention'd. excepting the *Hedges*; and if in any of these *Places* any considerable *waters* fortune to lie in their bottoms, *Fowl* would abundantly both *breed*, and *harbour* there. These are admirable *Directions* for *Park-lands* where *shelter* and *Food* is scarcity.

But even this *Improvement* yet does no way reach, what I have met withal in the most accurate, and no less laborious Calculation of Captain *Smith* upon this very *Topic*; where he *Demonstratively* asserts, that a *thousand Acres* of *Land*, Planted at one foot interval, in 7201 rows; taking up 31854401 *Plants* of *Oak*, *Ash*, *Chestnut* (or to be *sown*) taking up 17284800 of each *sort*, and fit to be *transplanted* at three years period (if set in good ground) are worth *eighteen pence* the hundred; and there being 345696 hundred, it amounts to no less than 25927 *l. 4 s.* besides the *Chestnuts*, of which there being 1728480 *l.* (valued at, and worth *half a Crown* the Hundred) they come to 21606 *l.* and the *total* of all, to 47533 *l. 4 s.*

This being made out, consider what an immense sum, *great Trees* would amount to, and in a large quantity of *Land*; such as were worthy a *Royal* undertaking: It is computed, that at *three* foot distance, the first *Felling* (that is, eight, or nine years after their *Planting*) would be worth in *Hoops*, *Roles*, *Firing*, &c. 35015 *l.* and the second *Fell*, 28657 *l. 19 s. 5 d.* And the fourth (which may be about thirty two years from their *Seminati-on*) 90104 *l. 17 s.* and so forward.

At *four* foot interval, and *Felling*, according to the same proportion, you may likewise reckon; and in 11 years with three years *Crop* of *Wheat* (sow'd at first between) it will amount to 34001 *l. 9 s. 4 d.* And the next, very much more; in regard the *Wood* will spring up thicker: So as at the fifth *Fell*, the accomplishment stands 126992 *l. 10 s. 2 d. 8 c.* and at the seventh (whoever lives to it) 200000: And if planted at wider distance, *viz. 18 foot* (according to the *Captains* method) at 30, or 40 years growth you may compute them worth 192961 *l. 6 s.* And in *seventy* years, 201001; besides the *three* years crop of *Wheat*, in all 410312 *l. 16 s.* which at 36 foot interval (accounted the utmost for *Timber*) takes up (for 1000 *Acres*) 40401 *Trees* for the first 100 years. Then,

To make room, as they grow larger, grubbing up every middle *Tree*, at 9 *l. per Tree*, 19800 *Trees* amount to 99000 *l.* and the remaining 20601 at 220 years growth, at but 8 *l. per Tree*, comes to 164808 *l.* besides the inferior *Crop* of *Meadow*, or *Corn* in all this time, sown in the distances; reckoning for three years product 90000 *Bushels* at 5 *s. per Bushel*, which will amount to 22500 *l.* besides the *Straw*, *Chaff*, &c. which at 5 *s. a Load*, and 3 *d. a Bushel Chaff*, comes to 2025 *l.* So as the total *Improvement* (besides the 217 years emolument arising from the *Corn*, *Cattel*, &c.) amounts to 288333.

And these *Trees* (as well they may) coming to be worth for *Timber*, 20 *l.* an *Oak*; the 20601 *Trees* amount to 412020 *l.* and the



the total *Improvement* of the 1000 *Acres* (the *Corn* Profits not computed) ascends to 675833 *l.* So as admit there were in all *England* (and which his *Majesty* might easily compass, even for his own *Proportion*, and for *Posterity*) 20000 *Acres* thus *Planted*, at two foot *diameter* (and as may be presum'd *thirty* foot high, which in 150 years, they might well arrive to) they would be worth 13516660 *l.* an immense and stupendious *Summe*, and an everlasting supply for all the *Uses* both of *Sea* and *Land*: But it is to Captain *Smith's* laborious *Works* (to which I wish all encouragement) that we have the total *Charge* of this noble *Undertaking* from the first *Semination*, to their *maturity*; by which it will be easie to compute what the *Gains* will be for any greater or lesser quantity.

But now to return to the *Place of Planting* (from whence this *Calculation* has more than a little diverted) we shall find, as we said, that even in the most *craggie, uneven, cold* and exposed places, not fit for *Arable*, as in *Biscay, &c.* and in our very *Peaks* of *Derbyshire*, and other *Rockie* places, *Ashes* grow about every *Village*, and we find that *Oak, Beech, Elm, and Ash*, will prosper in the most *flinty Soils*. And it is truly from these *Indications*, more than from any other whatsoever, that a broken, and decaying *Farmer*, is to be distinguish'd from a substantial *Free-holder*, the very *Trees* speaking the *conditions* of the *Master*: Let not then the *Royal Patrimony* bear a *Bankrupts* reproach: But to descend yet lower;

24. Had every *Acre* but *three, or four Trees*, and as many of *Fruit* in it as would a little adorn the *Hedge-rows*, the *Improvement* would be of fair advantage in a few years; for it is a shame that *Turnip-planters* should demolish, and undo *hedge-rows* near *London*, where the *Mounds* and *Fences* are stripp'd naked, to give *Sun* to a few miserable *Roots*, which would thrive altogether as well under them, being skilfully *prun'd* and *lopp'd*: Our *Gardners* will not believe me, but I know it to be true, though *Pliny* had not affirm'd it: As for *Elms* (saith he) their *Shade* is so gentle and *benigne*, that it nourishes whatsoever grows under it: And (*lib. 17. c. 22.*) it is his opinion of all other *Trees* (very few excepted) provided their *Branches* be par'd away, which being discreetly done, improves the *Timber* as we have already shew'd.

25. Now let us *calculate* a little at adventure, and much within what is both *feasible*, and very *possible*; and we shall find, that *four Fruit-trees* in each *Acre* throughout *England*, the product sold but at *six pence* the *Bushel* (but where do we now buy them so cheap?) will be worth a *Million* yearly: What then may we reasonably judge of *Timber*, admit but at the growth of *four pence* per *Acre* yearly (which is the lowest that can be estimated) it amounting to near *two Millions*? if (as 'tis suppos'd) there may be *five or six and twenty Millions* of *square Acres* in the *Kingdom* (besides *Fens, High-ways, Rivers, &c.* not counted) and without reckoning in the *Mast*, or *loppings*; which whosoever shall calculate from the annual *Revenue*, the *Mast* only of *Westphalia*, a small and wretched Countrey in *Germany*, does yield to that

Prince, will conclude to be no despicable *Improvement*.

26. In this poor *Territory*, every *Farmer* does by antient *custom*, Plant so many *Oaks* about his *Farm*, as may suffice to feed his *Swine*. To effect this they have been so careful, that when of late years, the *Armies* infested the poor *Country*, both *Imperialists*, and *Protestants*; the only *Bishoprick* of *Munster* was able to pay *One hundred thousand Crowns per annum* (which amounts of our money to about 25000 *l. sterling*) besides the ordinary *entertainment* of their own *Prince* and *private families*. This being incredible to be practis'd in so extream barren a *Country*, I thought fit to mention, either to encourage, or reproach us: *General Melander* was wont to say, The good *Husbandry* of their *Ancestors* had left them this Stock *pro sacra Anchorâ*; considering how the *People* were afterward reduc'd to live even on their *Trees*, when the *Souldiers* had devour'd their *Hogs*; redeeming themselves from great extremities, by the *Timber* which they were at last compelled to cut down, and which, had it continu'd, would have prov'd the utter desolation of that whole *Country*. I have this *Instance* from my most worthy, and honourable Friend Sir *William Carstear* (his *Majesties Resident* in *Germany*) who receiv'd this particular from the mouth of *Melander* himself: In like manner, the *Princes*, and *Freedom*s of *Hesse*, *Saxony*, *Thuringia*, and divers other places there, make vast incomes of their *Forest-fruit* (besides the *Timber*) for *Swine* only. I say then, whosoever shall duly consider this, will find *Planting of Wood* to be no contemptible *Addition*; besides the *Pasture* much improv'd, the *cooling* of fat, and heavy *Cattel*, keeping them from injurious motions, disturbance, and running as they do in *Summer* to find shelter from the heat, and vexation of *Flies*.

27. But I have done, and it is now time for us to get out of the *Wood*, and to recommend this, and all that we have propos'd, to His most *Sacred Majesty*, the Honourable *Parliament*, and to the Lord high *Treasurer*, *Principal Officers*, and *Commissioners* of the *Royal Navy*; that where such *Improvements* may be made, it be speedily, and vigorously prosecuted; and where any defects appear, they may be duly reformed.

28. And what if for this purpose there were yet some additional *Office* Constituted, which should have a more universal *Inspection*, and the charge of all the *Woods* and *Forests* in His *Majesties Dominions*? This might easily be perform'd by *Deputies* in every *County*; Persons judicious, and skilful in *Husbandry*; and who might be repair'd to for advice and direction: And if such there are at present (as indeed our *Laws* seem to provide) that their *Power* be sufficiently amplified where any thing appears deficient; and as their zeal excited by worthy encouragements, so might neglects be encounter'd by a vigilant and industrious *Cheque*. It should belong to their *Province*, to see that such *Proportions* of *Timber*, &c. were *Planted*, and set out upon every hundred, or mote of *Acres*, as the Honourable *Commissioners* have suggested; or, as might be thought convenient, the *quality*, and *nature* of the places

places prudently consider'd: It should be their Office also, to take notice of the *growth*, and *decay* of Woods; and of their *fitness* for publick *uses* and *sale*, and of all these to give *Advertisements*; that all defect in their ill governing may be speedily remedied; and the Superiour Officer, or Surveyor, should be accomptable to the Lord Treasurer, and to the principal Officers of his Majesties Navy for the time being: And why might not such a Regulation be worthy the establishing by some Solemn, and publick Act of State, becoming our glorious Prince, SOVEREIGN OF THE SEAS, and his prudent Senate, this present Parliament?

29. We find in *Aristotles Politics*, the Constitution of *Extra-urban Magistrates* to be *Sylvarum Custodes*; and such were the *Consulares Sylva*, which the great *Cesar* himself (even in a time when Italy did abound in Timber) Instituted; and was one of the very first things which he did, at the settling of that vast Empire, after the Civil Wars had exceedingly wasted the Country: *Suetonius* relates it in the Life of *Julius*; and *Peter Crinitus* in his fifth Book *De honesta disciplina*, c. 3. gives this reason for it, *Ut materies* (saith he) *non deesset, qua videlicet Navigia publica possent à præfecturis fabricum, confici*: True it is, that this Office was sometimes call'd *Provincia minor*; but for the most part, annex'd, and joyn'd to some of the greatest *Consuls* themselves; that facetious *satyr* of the *Comedian* (where *Plautus* names it *Provincia candicaria*) referring only to some under Officer, subservient to the other: And such a Charge is at this day extant amongst the noble *Venetians*, who have near *Trivisi* (besides what they nourish in other places) a goodly Forest of Oaks, preserv'd as a Jewel, for the only use of the Arsenal, call'd the *Montello*, which is in length twelve Miles, large five, and near twenty miles in compass; carefully supervised by a certain Officer, whom they name *il Capitano*; and we might Instance in many other prudent States; not to importune you with the expresse Laws which *Ancus Martius* the Nephew of *Numa*, and other Princes long before *Cesar*, did ordain for this very purpose; since indeed, the care of so publick, and honourable an Enterprize as is this of Planting, and Improving of Woods, is a right noble, and Royal undertaking; as that of the Forest of *Dean*, &c. in particular (were it bravely manag'd) an Imperial design; and I do pronounce it more worthy of a Prince, who truly consults his glory in the highest Interest of his Subjects, than that of gaining Battels, or subduing a Province: And if in saying so, or any thing else in this rustic Discourse, I have us'd the freedom of a plain Forester; it is the Person you command me to put on, and my plea is ready,

De collegiis Fabrorum, Centonariorum, & Den-drophororum, Naviculariorum exercitor. & Caudicariorum, plurimæ extant Inscriptiones apud Lipsium in lib. Inscript. antiq. quales Bergomensium, Brixianorum, Comensium, Lugdunensium, Aravicorum & Rhodanicorum eorumque corporum, & Collegiorum patronis curatibus. Vide etiam Hieron. Rubeum l. 1. Hist. Ravennat. Item de Den-drophoris Lod. Theodos. l. 1. & 2. iisdem verbis inscripto: Morisot. Orb. Marit. l. 1. c. 24.

Δρυὸς παρρύσις, πᾶς ἀνὴρ ἐυλαβεῖται.

*Præsentè Quercu, ligna quivis colligit.*

for who could have spoken less upon so ample a subject? and therefore



therefore I hope my *zeal* for it in these *Papers*, will (besides your *Injunctions*) excuse the prolixity of this *Digression*, and all other the *Imperfections* of my Services.

*Si canimus Sylvas, Sylvæ sunt Consule dignæ.*

## CHAP. XXXV.

### An Historical Account of the Sacredness, and Use of standing Groves, &c.

I. **A**ND thus have we finish'd what we esteem'd necessary for the Direction of *Planting*, and the *Culture* of *Trees* and *Woods* in general; whether for the raising of *new*, or preservation of the more *Antient* and venerable *shades*, crowning the brows of lofty *Hills*, or furnishing, and adorning the more fruitful and humble *Plains*; *Groves* and *Forests*, such as were never Prophan'd by the Inhumanity of *Edge-tools*: *Woods*, whose Original are as unknown as the *Arcadians*; like the goodly *Cedars* of *Libanus*, *Psal.* 104. *Arbores Dei* according to the *Hebrew*, for something doubtless which they noted in the *Genius* of those *Venerable places* besides their meer bulk and Stature: And verily, I cannot think to have well acquitted my self of this useful *Subject*, till I shall have in some sort vindicated the honour of *Trees*, and *Woods*, by shewing my *Reader* of what Estimation they were of old for their *Divine*, as well as *Civil Uses*; at least refresh both *Him*, and my *Self*, with what occurs of *Historical* and *Instructive* amongst the *Learned* concerning them. And first, *standing Woods* and *Forests* were not only the *original Habitations* of *Men*, but the first occasion of that *Speech*, *Polity* and *Society* which made them differ from *Beasts*. This, the *Architect Vitruvius* ingeniously describes, where he tells us that the violent percussing of one *Tree* against another forced by an impetuous *Wind*, setting them on *fire*, the flame did not so much surprise, and affright the salvage *Foresters*, as the *Warmth*, which (after a little gazing at the unusual accident) they found so comfortable; This (says he) invited them to approach it nearer, and as it spent and consum'd, by signs, and barbarous tones (which in process of time were form'd into significant words) to encourage one another to supply it with fresh combustibles: By this accident, the wild people, who before were afraid of one another, and dwelt asunder, began to find the benefit, and sweetness of *Society*, mutual assistance, and conversation, which they afterwards improv'd, by building *Houses* with those *Trees*, and dwelling nearer together: From these mean and imperfect beginnings they arriv'd in time to be

be Authors of the most polish'd *Arts*, establish'd *Laws*, peopl'd *Nations*, planted *Countries*, and laid the foundation of all that *Order* and *Magnificence* which the succeeding *Ages* have enjoy'd : In a word (and to speak a bold, and noble truth) *Trees*, and *Wood* have twice sav'd the whole world : first by the *Ark*, then by the *Cross* ; making full amends for the *Evil Fruit* of the *Tree* in *Paradise*, by that which was born on the *Tree* in *Galgotba*. But that we may give an account of their *sacred*, and other *Uses* of these venerable *Retirements*, we will next proceed to describe what those *places* were.

2. Though *Sylva* was the more general *Name*, denoting a large Tract of *Wood*, or *Trees*, the *incidua* and *cædua* ; yet there were several other *Titles* attributed to greater, or lesser assemblies of them : As when they Planted them for *Pleasure*, and shade only, they had their *Nemora* ; and as we our *Parks*, for the preservation of *Game*, and particularly *Venison*, &c. their *Salus*, and *Sylva invia*, secluded for the most part from the rest, &c. But among *Authors*, we meet with nothing more frequent, and indeed more celebrated, than those *Arboreæ* amenities and *Plantations* of *Woods* ; which they call'd *Luci* ; and which though sometimes we confess, were restrain'd to certain peculiar places, yet were they also promiscuously both used, and taken for all that the wide *Forest* comprehends, or can signify. To dismiss a number of *Critics*, The name *Lucus* is deriv'd by *Quintilian* and others à *minime Lucendo* because of its densitie,

— nulli penetrabilis astro.

Vide Just. Lipsium in Germaniam Taciti prolixè satis.

whence *Apuleius* us'd *Luco sublucido* ; and the *Poets*, *Sublustrè umbra* : Others (on the contrary) have taken it for *Light* in the *Masculine* ; because there they kindled *Fires*, by what accident unknown :

— Whether it were  
By Lightning sent from Heaven, or else there  
The Salvage-men in mutual Wars and Fight,  
Had set the Trees on Fire, their Foes affright.

— Seu cæli fulmine misso,  
Sive quod inter se bellum Sylvæstria gentes  
Hostibus intulerant ignem, formidinis ergo, &c.

Lucret. l. 5.

Or whether the *Trees* set Fire on themselves,

When clashing boughs thwarting, each other fret.

Mutua dum inter se rami stirpesque veruntur.

For such Accidents, and even the very heat of the *Sun* alone has kindled wonderful *conflagrations* : or haply (and more probably) to consume their *Sacrifices*, we will not much insist : The *Poets* it seems, speaking of *Juno*, would give it quite another original, and tune it to their Songs invoking *Lucina*, whilst the main and principal difference consisted not so much in the *Name*, as the *Use* and *Dedication*, which was for silent, awful and more solemn *Religion*, to which purpose they were chiefly *manu confiti*, such as we have been treating of, *intire*, and never violated with the *Axe* : *Fabius* calls them *Sacros ex Vetustate* venerable for their

Age 5

Age; and certain it is, they had of very great *Antiquity* been Consecrated to Holy uses, not only by Superstitious *Persons* to the Gentile *Deities* and *Heroes*; but the true *God*, by the *Patriarchs* themselves, who *ab initio* (as is presum'd) did frequently retire to such places to serve him in; compose their *Meditations*, and celebrate Sacred *Mysteries*, *Prayers*, and *Oblations*; following the Tradition of the *Gomerites* or Descendants of *Noah*, who first People'd *Galata* after the universal *Deluge*. From hence some presume that even the antient *Druids* had their origin: But that *Abraham* might imitate what the most Religious of that *Age* had practis'd before him, may not be unlikely; for we read he soon Planted himself and Family at the *Quercetum* of *Mambre*, *Gen.* 13. where as *Eusebius*, *Ecccl. Hist.* l. 1. c. 18. gives us the account, He spread his *Pavilions*, erected an *Altar*, Offer'd and perform'd all the Priestly *Rites*; and there, to the immortal glory of the *Oak*, or rather *Arboreous Temple*, he entertained *God* himself. *Isidor*, *St. Hierom*, and *Sozomenes* report confidently, that one of the most eminent of those *Trees* remained till the Reign of the great *Constantine*, who Founded a venerable *Chapel* under it; and that both the *Christians*, *Jews*, and *Arabs*, held a solemn *Anniversarie* or *Station* there, and believed that from the very time of *Noah* it had been a Consecrated place: sure we are, it was about some such assembly of *Trees*, that *God* was pleas'd first of all to appear to the *Father* of the *Faithful*, when he established the *Covenant* with him, and more expressly, when removing thence (upon confirming the League with *Abimelech*, *Gen.* 21. and settling at *Beersheba*) he design'd an express place for *Gods* Divine Service: For there, says the sacred *Text*, He Planted a Grove, and called upon the Name of the Lord. Such another *trust* we read of (for we must not always restrain it to one single *Tree*) when the *Patriarch* came to אֵילֹן מֹרֶה *Elon Moreh*, ad *Convallem illustriam*: But whether that were the same in which the *High-priest* repositied the famous *Stone*, after the Exhortation mention'd *Josua* 24. 26. we do not contend; under an *Oak* says the *Scripture*, and it grew near the *Sanctuary*, and probably might be that which his *Grand-child* Consecrated with the Funeral of his beloved *Rebecca*, *Gen.* 35. For 'tis apparent by the *Context*, that There, *God* appeared to him again: So *Grotius* upon the words (*Subter quercum*) *Il-lam ipsam* (says he) *cujus mentio*, *Gen.* 35. 4. in *historia Jacobi & Jude*; and adds, *Is locus in honorem Jacobi diu pro Templo fuit*. That the very spot was long after us'd for a *Temple* in honour of him.

3. If we would track the Religious esteem of *Trees* and *Woods*, yet farther in *Holy Writ*, we have that glorious *Vision* of *Moses* in the fiery *Thicket*, and it is not to abuse or violate the *Text*, that *Monceus* and others, interpret it to have been an *intire Grove*, and not a single *Bush* only, which he saw as burning, yet unconsum'd. *Puto ego* (says my Author) *rubi vocabulo non quidem rubum aliquem unicum & solitarium significari, verum rubetum totum, aut potius fruticetum, quomodo de Quercu Mambre pro Querceto*



*Querceto toto Docti intelligent.* Now that they Worshipped in that Place soon after their coming out of *Ægypt*, the following story shews; and the *Feast of Tabernacles* had some resemblance of *Patriarchal Devotion under Trees*, though but in temporary *Groves* and *Shades* in manner of *Booths*, yet Celebrated with all the refreshings of the *Forest*; and from the very Infancy of the *World* in which *Adam* was entertain'd in *Paradise*, and *Abraham* (as we noted) receiv'd his Divine Guests, not in his *Tent*, but under a *Tree*, an *Oak*, (*Triclinium Angelicum* the Antients Dining-Room) all intelligent persons have imbrac'd the solace of shady *Arbours*, and all devout Persons found how naturally they dispose our Spirit to Religious Contemplations: For this, as some conceive, they much affected to Plant their *Trees* in *Circles*, and gave that capacious Form to the first *Temples*, observ'd not only of old, but even at this day by the *Jews*, as the most accommodate for their Assemblies; or, as others, because that figure most resembl'd the *Universe*, and the *Heavens*: *Templum à Templando* says a knowing Critic, and another, *Templum est nescio quid immane, atque amplum*; such as *Arnobius* speaks of, that had no *Roof* but *Heaven*, till that sumptuous *Fabric* of *Solomon* was confin'd to *Jernsalem*; and the goodliest *Cedars*, and most costly *Woods* were carried thither to form the *Columns*, and lay the *Rafters*; and then and not till then, was it so much as *Schism* that I can find, to retire to *Groves* for their *Devotion*, or even to *Bethel* it self.

4. In such Recesses were the antient *Oratories* and *Proscencha* built even amongst the *Gentiles*, as well as the People of *God*, (nor is it alwaies the less authentical for having been the guise of *Nations*) hence that of *Philo*, speaking of one who *πῶρας Ἰουδαίου μεροῦρας ἰδενδοποιήσετο*, &c. had sell'd all the *Trees* about it; and such a place the *Satyrists* meant, where he asks, *In qua te quero proscencha?* because it was the *Rendezvous* also, where poor People us'd to frequent to beg the *Alms* of devout and *Charitable* Persons; and it was esteem'd piacular for any to cut down so much as a stick about them, unless it were to build them, when with the *Psalmist*, men had honour according to their forwardness of repairing the *Houses* of *God* in the *Land*, upon which account it was lawful to lift up *Axes* against the goodliest *Trees* in the *Forest*; but those zealous days are past,

See *Tirinus*,  
our *Meady*,  
*Ainsworth*, &c.

Now *Temples* shut, and *Groves* deserted ly,  
All *Gold* adore, and neglect *Piety*.

*Et nunc desertis cessant sarraria Lucis,  
Aurum omnes villa jam Pietate colunt.*

*Propert.*

5. They came afterwards indeed to be abus'd to *Superstition*, and for their opacousness, to *abominations*, and works of darkness; but what good, or indifferent thing has not been subject to per-  
version? It is said in the end of *Isaiah*, *Exprobratur Hebraeis quod in Opisthoniais Idolorum horti essent in quorum medio februebantur*; but how this is applicable to *Groves* does not appear so fully; though we find them interdicted, *Deut.* 16. 21. *Judg.* 6. 26. *2 Chron.* 31. 3, &c. and forbidden to be Planted near the *Temple*; and an impure *Grove* on Mount *Libanus* dedicated to *Venus*, was

*Vide Seldenum  
de jure Nat. &  
Gent. lib. L. 2.  
c. 6.  
Lil. & Gra.  
Gyraldum de  
diis gent. Syn-  
tag. 17.*

by

Vide Sanctium,  
Piscat. Gro-  
tium.

by an Imperial *Edict* of *Constantine* extirpated; but from the *abuse* of the thing to the *non-use*, the *Consequence* is not always valid, and we may note as to this very particular, that where in divers places of *Holy Writ*, the denunciation against *Groves* is so express, it is frequently to be taken but *catachrestically*, from the *Wooden Image* or *Statue* call'd by that name, as our Learned *Seiden* makes out by sundry Instances in his *Syntagma de Diis Syris*.

The Summ of all is, *Paradise* it self was but a kind of *Nemorous Temple* or sacred *Grove*, Planted by *God* himself, and given to *Man*, *tanquam primo sacerdoti*, the Word is עֵדֶן which properly signifies to Serve or administer *res divinas*, a place Consecrated for sober Discipline, and to Contemplate those *mysterious* and *Sacramental* Trees which they were not to touch with their hands; and in memory of them, I am inclin'd to believe, Holy Men (as we have shew'd in *Abraham* and others) might Plant and cultivate *Groves*, where they traditionally invok'd the *Deity*; and *S. Hierom*, *Chrysostom*, *Cyprian*, *Augustine*, and other *Fathers* of the *Church* greatly magnified these pious advantages; and *Cajetan* tells us, that from *Isaac* to *Jacob* and their Descendants they followed *Abraham* in this Custom: *Solomon* was a great planter of them, and had an *house of Pleasure* or *Lodge* in one of them for *Recess*: In such places were the Monuments of their *Saints*, and the Bones of their *Heroes* deposited; for which *David* celebrated the Humanity of the *Galaadites*, In *Nemora Jabes* as the most sacred and inviolable; In such a place did the *Angel* appear to *Gideon*, and in others *Princes* were *Inaugurated*; so *Abimelec*, *Judic. 9*. And the *Rabbins* add a reason why they were reputed so Venerable; because, more remote from Men and Company, more apt to compose the *soul* and fit it for divine Actions, and sometimes *Apparitions*, for which the first enclosures were attributed to *Groves*, *Mountains*, *Fountains of Water*, and the like solemn objects; as of peculiar Sanctity, and as the old sense of all words denoting Sanctity did import *separateness*, and uncommon propriety: See our Learned *Meade*. For though since the *Devils* intrusion into *Paradise*, even the most holy, and devoted Places were not free from his Tentations and ugly Stratagems; Yet we find our Blessed *Saviour* did frequently retire into the Wilderness, as *Elijah* and *S. John Baptist* did before him, and divers other Holy men; particularly, the *ἑσωνίξοι*, whom *Philo* mentions; a certain Religious *sect*, who addicting themselves to *Contemplation*, chose the solitarie Recesses of *Groves* and *Woods*, as of old the *Rechabites*, *Essenes* and other *Institutions*: The reason is obvious, and I shall shew when I come to speak concerning the use of *Gardens* in another *Work* (long since attempted, and now wanting only time to transcribe for the *Press*) how the *Air* of such retired places may be assistant, and influential for the inciting of Penitential expressions and affections; especially where one may have the additional assistances of solitary *Grotts*, murmuring *Streams*, and desolate *Prospects*: I remember that under a *Tree* was the place of that admirable *S. Augustines* solemn *Conversion*, after all his importunate

*Philo lib. vii.*  
*His Deog.*

importunate reluctances: I have often thought of it, and it is a melting passage as himself has recorded it, *Coh. l. 8. c. 8.* and he gives the reason, *Solitudo enim mihi ad negotium flendi aptior fuggerebatur.* And that indeed such opportunities were successful for *Recollection*, and to the very reformation of some ingenious Spirits from secular Engagements to excellent and mortifying Purposes, we may find in that wonderful relation of *Pontianus's* two Friends, great *Courtiers* of the time, as the same Holy Father relates it, previous to his own Conversion. And here I cannot omit an observation of the Learned Dr. *Plot* in his (often cited) *Nat. Hist. of Oxfordshire*; taking notice of two eminent Religious Houses whose foundations were occasion'd by Trees: The first *Oseney Abby*: The second by reason of a certain Tree standing in the *Meadows* (where after was built the *Abby*) to which a company of *Pyes* were wont to repair, as oft as *Editha* the wife of *Robert d'Oily*, came to walk that way to solace her self: for the clamorous *Birds* did so affect her, that consulting with one *Radulphus* (*Canon of S. Fridiswid*) what it might signify, the subtle man advis'd her to build a *Monastery* where that Tree stood, as if so directed by the *Pyes* in a miraculous manner: Nor was it long e're the *Lady* procur'd her Husband to do it, and to make *Radulphus* (her Confessor) first Prior of it.

Such another Foundation was caus'd by a tripple *Elm*, having three *trunks* issuing from one *Root*: Near such a Tree as this was Sir *Thomas White* Lord Mayor of *London*, warn'd by *Dream* to erect a *College* for the education of youth, which he did, namely *St. Johns* in *Oxford*, which with the very Tree still flourishes in that famous *University*. But of these enough, and perhaps too much.

6. We shall now in the next place endeavour to shew how this innocent veneration to *Groves* passed from the *People of God* to the *Gentiles*, and by what degrees it degenerated into dangerous Superstitions: For the *Devil* was always *Gods Ape*, and did so ply his *Groves*, *Altars*, and *Sacrifices*, and almost all other Rites belonging to his Worship, that every Green Tree was full of his Abominations, and places devoted to his impure Service; *Hi fuerunt* (says *Pliny*, speaking of *Groves*) *quondam Numinum templa, &c.* These were of old the *Temples* of the *Gods*, and after that simple (but antient Custom) men at this day Consecrate the fairest and goodliest Trees to some *Deity* or other; nor do we more adore our glittering Shrines of *Gold* and *Ivory*, than the *Groves*, in which with a profound and awful silence, we worship them. For in truth the very Tree it self was sometimes *Deified*, and that *Celtic* Statue of *Jupiter* no better than a prodigious tall *Oak*, whence 'tis said the *Chaldean Theologues* deriv'd their superstition towards it; and the *Persians* we read, us'd that Tree in all their mysterious Rites; so as to some they proceeded to the offering even of humane *Sacrifices*.

*Cyvil. Alexand.*  
in *Hose. 4. 13.*  
*Deut. 16. 4.*  
*2 Reg. 16. 4.*

*Melchior Adamus*  
*Hist. Eccles.*  
*de Sueconibus;*  
c. 234

*Mariana in 2.*  
*Paralip. 28. 4.*



Each Tree besprinkled was with humane gore.

*Omnis & humanis lustrata cruoribus arbor.*

Lucan l. 3.

*Procopius* tells us plainly that the *Scythians* worshipped Trees and whole Forests of them: See *Jo. Dubravins l. 1. Hist. Bohem.* and that formerly the *Gandenses* did the like, *Surius the Legendary* 6. Feb. reports in the life of *S. Amadus*: So did the *Vandals*, says *Albert Crantz*; and even those of *Peru*, as I learn from *Acosta l. 5. c. 11*. But one of the first Idols which procur'd particular veneration in them was the *Sidonian Ashtaroth*, who took her name à *Lucis*, as the *Jupiter* *Ἰδαίος* amongst the *Rhodians*, the *Nemorensis Diana* or *Arduenna*, a celebrated Deity, of this our Island; for her patronage of Wood and Game;

*Diva potens nemorum, terror sylvestribus Apris, &c.*

as *Gildas* an antient Bard of ours has it; so soon had Men it seems degenerated into this irrational and stupid Devotion, that Arch-Fanatic *Satan* (who began his pranks in a Tree) debauching the Contemplative use of Groves and other Solitudes. Nor were the Heathens alone in this crime, the *Basilidians*, and other Hereticks even amongst the *Christians*, did consecrate to the Woods and the Trees their Serpent-footed and barbarous *ABOPAZAS*, as it is yet to be seen in some of their mysterious Talismans and *Periaptas* which they carried about.

*In opera Paschali.*

But the Roman madness (like that which the Prophet derides in the Jews) was well perstring'd by *Sedulius* and others, for imploring these Stocks to be propitious to them, as we learn in *Cato de R. R. c. 113. 134 &c.* Nor was it long after, when they were generally Consecrated by *Favvus*, that they boldly set up his Oracles and Responses in these nemorous places: Hence the Heathen Chapels had the name of *Pana*, and from their wild and extravagant Religion, the Professors of it Fanatics; a name well becoming some of our late Enthusiasts amongst us; who, when their Quaking fits possess them, resemble the giddy motion of Trees, whose heads are agitated with every wind of Doctrine.

7. Here we may not omit what Learned men have observ'd concerning the Custome of Prophets and Persons inspir'd of old, to sleep upon the Boughs and branches of Trees (I do not mean on the tops of them, as the Salvages somewhere do in the Indies for fear of Wild Beasts in the night time) but on Matresses and Beds made of their Leaves, ad Consulendum to ask advice of God. Naturalists tell us, that the *Laurus*, and *Agnus Castus* were Trees which greatly compos'd the Phansy, and did facilitate true Visions; and that the first was specifically efficacious *πρὸς τὴν ἐνδυναμωσίν* (as my Authour expresses it) to inspire a Poetical fury: Such a Tradition there goes of *Rebekah* the Wife of *Isaac*, in imitation of her Father in Law: The Instance is recited out of an antient Ecclesiastical History by *Abulenfis*; and (what I drive at) that from

See S. Hier.  
in Trad. Heb.  
3 Reg. c. 4.

from hence the *Delphic Tripod*, the *Dodonean Oracle* in *Epirus*, and others of that nature had their Originals: At this *decubation* upon *Boughs* the *Satyrists* seems to hint where he introduces the *Gypsies*.

—with fear  
The poor she *Jew* begs in my Ladies ear,  
The *Groves* high *Priests*, Heavens true messenger,  
Hierusalem's old Laws expounds to her.

Stapylton.

*Arcanam Judea tremens mendicat in aurem*  
*Interpres Legum Solymarum, & magna Sacerdos*  
*Arboris, ac summi fida interuincia Cæli.*

Juv. Sat. 6.

For indeed the *Delphic Oracle* (as *Diodorus l. 16.* tells us) was first made è *Lauri ramis*, of the *Branches* of *Laurel* transferr'd from *Theffaly*, bended, and arched over in form of a *Bower* or *Summer-house*, a very simple Fabric you may be sure: And *Cardan* I remember in his Book *de Fato*, insists very much on the Dreams of *Trees* for portents and presages, and that the use of some of them do dispose men to Visions.

8. From hence then began *Temples* to be erected and sought to in such Places; and as there was hardly a *Grove* without its *Temple*, so had every *Temple* almost, a *Grove* belonging to it, where they plac'd *Idols*, and *Altars* and *Lights* endow'd with fair Revenues which the devotion of Superstitious persons continually augmented; and I remember to have seen something very like this in *Italy*, and other Parts, namely, where the *Images* of the *B. Virgin*, and other *Saints*, have been enshrined in hollow, and umbragious *Trees*, frequented with much veneration, which puts me in mind of what that great Traveller *Pietro della Valla* relates, where he speaks of an extraordinary *Cypress*, yet extant, near the Tomb of *Cyrus*, to which at this day many *Pilgrimages* are made, and speaks of a *Gummy* transudation which it yields, that the *Turks* affirm to turn every *Friday* into drops of *Blood*: The *Tree* is hollow within, adorn'd with many *Lamps*, and fitted for an *Oratory*, and indeed some would derive the name *Lucus* a *Grove*, as more particularly to signify such enormous and cavernous *Trees*, *quod ibi lumina accenderentur Religionis causa*: But our *Author* adds, The *Ethnics* do still repute all great *Trees* to be *divine*, and the habitation of *Souls* departed: These the *Persians* call *Pir* and *Imâm*. Perhaps such a hollow *Tree* was that *Asylum* of our Poets *Hero*, when he fled from his burning *Troy*,

— an ancient *Cypress* near,  
Kept by Religious Parents many a year.

—juxtaq; antiqua *Cupressus*  
*Religione Patrum multos servata per annos.*  
Æn. 2.

For that they were places of Protection, and priviledg'd like *Churches*, and *Altars*, appears out of *Livy* and other good Authority: Thus where they introduce *Romulus* encouraging his new *Colony*,

So soon as e're the *Grove* he had immur'd  
Haste hither (says he) here you are secur'd.

—ut saxo *Lucum* circumdedit alto  
*Quilibet, huc, dicit, Confuge, tutus eris.*

Such a Sanctuary was the *Aricina*, and Suburban *Diana*, call'd the *Nemorale Templum*, and divers more which we shall reckon up  
L 1 2  
Virg. 6. Eclog.  
& 1. Æn. id.  
vide Fab. l. 3.  
anon. Semest. c. 1.

anon. *Lucian* in his *dea Syria* speaks of these *Temples* and dedications in their *Groves* among the *Egyptians*: *Lucus in urbe fuit*, &c. and what follows? *Hic Templum* --- and since they could not translate the *Grove* with the *Idol*, they \*carv'd out something like it, which the superstitious People bought, carried home, and made use of representing those venerable places, in which they had the *Images* of some feign'd *Deity* (suppose it *Tellus*, *Baal* or *Priapus*) and such was the *Jupiter* Ἰουδεδῶπος of the *Rhodians*, *Bacchus* of the *Boetians*, אֲשֶׁר the *Sidonian Ashteroth*: And the *Women* mentioned 2 *Reg.* 23. 7. who are said to weave *hangings*, and *curtains* for the *Grove*, were no other than makers of *Tentories*, to spread from *Tree* to *Tree*, for the more opportune and secret perpetration of those impure *Rites* and *Mysteries*, which (without these Coverings) even the opacousness of the places, were not obscure enough to conceal.

\**Luci dicuntur, non modo collectio Arborum, &c. sed etiam Sciographiæ five delineationes Lucorum in tabella: See the Annotation on Isa. 17. 8. collated with 2 Reg. 23. 6. Crit. Sacr. for they brought the Grove out of the Temple, and burnt it, which clearly shews it was the picture or Image of the Grove, and not the Trees themselves.*

9. The *Mysteries* which the famous *Druids* celebrated in their *Woods* and *Forests*, are at large to be found in *Cæsar*, *Pliny*, *Strabo*, *Diodorus*, *Mela*, *Apuleius*, *Ammianus*, *Lucan*, *Aventinus*, and innumerable other *Writers*, where you will see that they chose the *Woods* and the *Groves*, not only for all their *Religious Exercises*, but their *Courts of Justice*; as the whole Institution and Discipline is recorded by *Cæsar*, l. 6. and as he it seems found it in our Countrey of *Britain*, from whence it was afterwards translated into *Gallia*: For he attributes the first rise of it to this once happy *Island* of *Groves*, and *Oaks*; and affirms that the antient *Gauls* travelled hither for their initiation. To this *Tacitus* assents, 14 *Annal.* and our most Learned *Critics* vindicate it both from the *Greeks* and *French*, impertinently challenging it: But the very *Name* it self, which is purely *Celtic*, does best decide the Controversie: For though *Spūs* be *Quercus*; yet *Vossius* skilfully proves that the *Druids* were altogether strangers to the *Greeks*; but what comes yet nearer to us, *Dru*, *fides* (as one observes) begetting our now antiquated *Trow*, or *True*, makes our title the stronger: Add to this, that amongst the *Germans* it signified no less than *God* himself; and we find *Drutin*, or *Trudin* to import *Divine*, or *Faithful* in the *Othfridian Gospel*, both of them *Sacerdotal* expressions. But that in this *Island* of ours men should be so extremely devoted to *Trees*, and especially to the *Oak*, the strength and defence of all our enjoyments, inviron'd as we are by the *Seas*, and *Maritial Neighbours*, is less to be wonder'd,

Our British *Druids* not with vain intent,  
Or without Providence did the *Oak* frequent;  
That *Albion* did that *Tree* so much advance  
Nor Superstition was, nor ignorance,  
Those Priests divining even then, bespoke  
The mighty Triumphs of the *Royal Oak*:  
When the *Seas* Empire with like boundless fame,  
Victorious *CHARLES* the Son of *CHARLES* shall  
(claim.

Non igitur Dryade nostrates pectore vano,  
Nec sine consulto coluerunt Numine Quercum;  
Non illam Albionis jam tum celebravit honore  
Stulta Superstitio, venturive inscia seculi,  
Angliaci ingentes puto prævidisse triumphos  
Roboris, Imperiumque maris quod maximus olim  
CAROLIDES vassâ Victor dititione tenet.

Coulei L. 6. Pl.

as we may find the *Prediction* gloriously followed by our ingenious *Poet*, where his *Dryad* consigns that Sacred *Depositem* to this  
Monarch



*Monarch of the Forest*, the *Oak*, than which nothing can be more sublime and rapturous.

10. From those *Sylvan Philosophers* and *Divines* (not to speak much of the *Indian Brachmans* descended of the antient *Gymnosophists*) 'tis believed that the great *Pythagoras* might Institute his silent *Monasterie*; and we read that *Plato* entertain'd his Auditors amongst his Walks of *Trees*, which were afterward defac'd by the inhumanity of *Sylla*, when as *Appian* tells us, he cut down those venerable shades to build Forts against *Pyrens*: And another we find he had, Planted near *Anicerides* with his own hands, wherein grew that celebrated *Platanus* under which he introduces his Master *Socrates* discoursing with *Phaedon de Pulchro*: Such another place was the *Athenian Cephisia* as *Agellius* describes it; we have already mention'd the stately *Xysta*, with their shades, in cap. 23. *Democritus* also taught in a *Grove*, as we find in that of *Hippocrates* to *Damagetus*, where there is a particular *Tree* design'd ad Otium literarum; and I remember *Tertullian* calls these places ad Mart. *Studia opaca*: I could here tell you of *Palæmon*, *Timon*, *Apollo-nius*, *Theophrastus*, and many more that erected their Schools in such *Colleges of Trees*, but I spare my Reader; I shall only note that 'tis reported of *Thucydides*, that he compiled his noble *History* in the *Scaplan Groves*, as *Pliny* writes; and in that matchless piece de Oratore, we shall find the Interlocutors to be often under the *Platanus* in his *Tusculan Villa*, where invited by the freshness and sweetness of the place, *Admonuit* (says one of them) *me hæc tua Platanus quæ non minus ad opacandum hunc locum patulis & diffusa ramis, quam illa, cujus umbram secutus est Socrates, quæ mihi videtur non tam ipsa aquula, quæ describitur, quàm Platonis oratione crevisse, &c.* as the *Orator* brings it in, in the person of one of that meeting.

I confess *Quintilian* seems much to question whether such places do not rather perturb, and distract from an *Orators* Recollection, and the depths of Contemplation: *Non tamen* (says he) *protinus audiendi, qui credunt aptissima in hoc Nemora, sylvasque, quod illa cæli libertas, locorumque amœnitas, sublimem animum, & beatiorum spiritum parent: Mihi certè jucundus hic magis, quàm studiorum hortator videtur esse secessus: Namq; illa ipsa quæ delectant, necesse est avocent ab intentione operis destinati*: He proceeds—*Quare Sylvarum amœnitas, & præter labentia flumina, & inspirantes ramis arborum aura; volucrumque cantus & ipsa latè circumspiciendi libertas, ad se trahunt; ut mihi remittere potius voluptas ista videatur cogitationem, quam intendere.* But this is only his singular suffrage, which as conscious of his Error, we soon hear him retract, when he is by and by as loud in its Praises, as the *Places* in the World the best fitted for the diviner *Rhetorique* of Poetry: But let us admit another to cast in his Symbol for Groves: *Nemora* (says he) *& Luci, & secretum ipsum, tantam mihi afferunt voluptatem, ut inter præcipuos Carminum fructus numerem, quod nec in strepitu, nec sedente ante hostium litigatore, nec inter sordes & lacrymas reorum componuntur:* Tacitus.

*ponuntur : Sed secedit animus loca pura, atque innocentia, frui-  
turque sedibus Sacris.*

And indeed the *Poets* thought of no other *Heaven* upon Earth, or elsewhere; for when *Anchises* was setting forth the felicity of the other life to his Son, the most lively description he could make of it was to tell him,

— We dwell in shady Groves,

— *Lucis habitamus opacis,*

and that when *Aeneas* had travell'd far to find those happy Abodes,

They came to Groves, of happy Souls the Rest,  
To Ever-greens, the dwellings of the Blest.

*Drevere locos letos, & amœna vireta  
Fortunatorum Nemorum, Sedesque beatas,*

Such a prospect he gives us of his *Elysium*; and therefore wise and great Persons had always these sweet opportunities of Recess, their *Domos Sylva*, as we read, 2 Reg. 7. 2. which were thence called *Houses of Royal Refreshment*, or as the *Septuagint* οἶκος δρυμῶν, not much unlike the *Lodges* in divers of our Noble-mens *Parks*, and *Forest-Walks*; which minds me of his choice in another *Poem*,

In lofty Towers let *Pallas* take her rest,  
Whilst shady Groves above all things please us best.

— *Pallas quas condidit arces,  
Ipsa colat, nobis placeant ante omnia Sylva.*

Eclog. 2.

And for the same reason *Mecenas*

— Chose the broad Oak —

*Maluit umbrosam Quercum* —

and as *Horace* bespeaks them,

Me the cool Woods above the rest advance  
Where the rough *Satyrs* with the light *Nymphs* dance.

— *Me gelidum nemus  
Nympharumq; leves cum Satyris Chori,  
Secernunt populo* —

and *Virgil* again,

Our sweet *Thalia* loves, nor does she scorn  
To haunt umbragious Groves —

*Nostra nec erubuit Sylvas habitare Thalia.*

or as *thus* expressed by *Petrarch*,

— The *Muse* her self enjoys  
Best in the Woods, verse flies the City noise.

*Sylva placet Musis, urbs est inimica Pottis.*

So true is that of yet a better *Poet* of our own;

As well might *Corn*, as *Verses* in Cities grow,  
In vain the thankless Glebe we Plow and Sow,  
Against th' unnatural Soil in vain we strive,  
Tis not a ground in which these Plants will thrive.

Cowley.

When

When it seems they will bear nothing but *Nettles*; and *Thorns* of *Satyrs*, and as *Juvenal* says, by *Indignation* too; and therefore almost all the *Poets*, except those who were not able to eat Bread without the Bounty of Great men; that is, without what they could get by flattering them (which was *Homer's* and *Pindar's* case) have not only withdrawn themselves from the Vices and Vanities of the great World, into the innocent felicities of *Gardens*, and *Groves*, and *Retiredness*, but have also commended, and adorned nothing so much in their never-dying *Poems*. Here then is the true *Parnassus*, *Castalia*, and the *Muses*, and at every call in a *Grove* of Venerable *Oaks*, methinks I hear the answer of an hundred old *Druids*, and the *Bards* of our inspired Ancestors.

Innumerable are the Testimonies I might produce in behalf of *Groves* and *Woods* out of the *Poets*, *Virgil*, *Gratius*, *Ovid*, *Horace*, *Claudian*, *Statius*, *Silius*, and others of later times, especially the divine *Petrarch*; were I minded to swell this charming Subject, beyond the limits of a Chapter: I think only to take notice that *Theatrical* Representations, such as were those of the *Ionian* call'd *Andria*; the *Scenes* of *Pastorals*, and the like innocent Rural Entertainments were of old adorn'd and trimm'd up *è ramis & frondibus, cum racemis & corymbis*, and frequently represented in *Groves*, as the Learned *Scaliger* shews: And here the most beloved of *Apollo* rooted his coy *Misfire*, and the noblest Raptures have been conceiv'd in the Walks and shades of Trees, and *Poets* have compos'd *Verses* which have animated men to Heroic and glorious Actions; here *Orators* (as we shewed) have made their *Panegyrics*, *Historians* grave Relations, and the Profound Philosophers lov'd here to pass their lives in repose and Contemplation, and the frugal Repasts — *mollesque sub arbore somni* were the natural, and chaste delights of our Fore-fathers.

12. Nor were *Groves* thus only frequented by the great *Scholars*, and the great *Wits*, but by the greatest *Statesmen* and *Politicians* also; Thence that of *Cicero* speaking of *Plato*, with *Clinias* and *Megillus*, who were us'd to discourse *de rerum publicarum institutis, & optimis legibus* in the *Groves* of *Cypress*, and other umbrageous Recesses: Nay they have sometimes been known to Crown their *Kings* under a goodly Tree, or some venerable Grove, where they had their *Stations*, and conventions; for so they chose *Abimelec*, see *Tostatus* upon *Judg.* 9 6. and I read (in *Chronicon Jo. Bromton*) that *Augustine* the Monk (sent hither from the Pope) held a kind of *Council* under a certain *Oak* in the West of England, and that concerning the great question, namely the right celebration of *Easter*, and the state of the *Anglicane-Church*, &c. where also 'tis reported he did a great Miracle. The *Athenians* were wont to consult of their gravest matters and publick Concernments in *Groves*: Famous for these *Assemblies* were the *Ceranium*, and at *Rome* the *Lucus Petilinus*, the *Farentinus*, and others, in which there was held that renowned *Parliament* after the Defeat of the *Ganles* by *M. Popilio*: For 'twas supposed that in places so Sacred,



Sacred, they would Faithfully, and Religiously observe what was Concluded amongst them.

In such green Palaces the first Kings reign'd,  
Slept in their Shades, and Angels entertain'd:  
With such old Counsellors they did advise,  
And by frequenting Sacred Groves, grew Wise;  
Free from th' impediments of Light and Noyle,  
Man thus retir'd, his nobler thoughts employs.

Mr. Waller.

L. 16. c. 44.  
Arist. l. Ep. 10.

Vide Sym-  
mach. l. 4.  
Ep. 28.

As our excellent Poet has describ'd it: and amongst other weighty matters they treated of *Matches* for their *Children*, and the Young people made *Love* in the cooler Shades, and engrav'd their *Mistress's* Names upon the Bark, *tituli areis literis insculpti*, as *Pliny* speaks of that Antient *Vatican Ilex*, and *Euripides* in *Hippolyto*, where he shews us how they made the incision, whisper their soft Complaints like that of *Aristanetus*, *Τὸν δὲ εἶθε ὦ δέσποινά, &c.* and with that it had but a Soul and a Voice to tell *Cydicpe*, the fair *Cydicpe*, how she was belov'd: And doubtless this *Character* was Antienter than that in *Paper*; let us hear the Amorous Poet leaving his young Couple thus Courting each other.

My name on Bark engraven by your fair hand,  
*Oenone*, there, cut by your knife does stand;  
And with the Stock my Name alike do's grow,  
Be't so, and my advancing honour show.

*Incise servanti à te mea nomina fagi,  
Et legor, Oenone, salce notata tua,  
Et quantum trunci, tantum mea nomina cresunt,  
Crescite, & in titulos surgite ritè meos.*

Ovid. Ep.

which doubtless he learnt of *Maro* describing the unfortunate *Gallus*.

There on the tender bark to carve my Love;  
And as they grow, so may my hopes improve.

*tenerisque meos incideve amores  
Arboribus: Crescent illa, crescentis amores.*

Eclog. 10.

and these pretty Monuments of Courtship I find were much used on the *Cherry-tree* (the *Wild one* I suppose) which has a very smooth *Rind*, as the witty *Calpurnius*,

Repeat, thy words on Cherry-bark I'll take,  
And that red skin my Table-book will make.

*Dic age, nam Cerasi tua cortice verba notabo.  
Et decissa feram rutilanti carmina libro.*

I omit *Olympius Nemesianus*, and others, for we have dwelt too long on this trifle, but we will now change the *Scene* as the *Aegyptians* did the mirth of their *Guests*, when they serv'd in a *Scull* to make them more serious. For,

13. Amongst other Uses of *Groves*, I read that some Nations were wont to hang, not Malefactors only, but their departed Friends, and those whom they most esteemed, upon *Trees*, as so much nearer to *Heaven*, and dedicated to *God*; believing it far more honourable, than to be buried in the *Earth*; and that some affected to repose rather in these Woody places *Propertius* seems to bespeak.

The

The Gods forbid my Bones in the high-Road  
Should lie, by every wandering vulgar trod;  
Thus buried Lovers are to scorn expos'd,  
My Tomb in some by-Arbor be inclos'd.

*Dii faciant mea ne terrâ locet ossa frequent  
Quâ facit assiduo tramite vulgus iter;  
Post mortem tumuli sic infamantur amantum,  
Me tegat arboreâ devota terra comâ.*

The same is affirmed of other *Septentrional* People by *Chr. Cili-  
cus de Bello Dithmarsico* l. 1. We have already mention'd *Rebe-  
kah*, and read of *Kings* themselves that honoured such places  
with their *Sepulchres*: What else should be the meaning of *1 Chro.*  
*10. 12.* when the valiant men of *Jabesh* interr'd the Bones of *Saul*  
and *Jonathan* under the *Oke*. Famous was the *Hyrnethian Cæ-  
meterie* where *Daiphon* lay; *Ariadnes* Tomb was in the *Amathu-  
sian* Grove in *Crete*, now *Candie*: For they believed that the  
*Spirits* and *Ghosts* of Men delighted to expatiate, and appear in  
such solemn places, as the Learned *Grotius* notes from *Theophylact*,  
speaking of the *Demons*, upon *Mat. 8. 20.* for which cause *Plato*  
gave permission, that *Trees* might be Planted over *Graves*, to ob-  
umbrate and refresh them.

Our Blessed *Saviour* chose the *Garden* sometimes for his *Ora-  
tory*, and dying, for the place of his *Sepulchre*; and we do a-  
vouch for many weighty causes, that there are none more fit to  
bury our Dead in, than in our *Gardens* and *Groves*, where our  
*Beds* may be decked with verdant and fragrant *Flowers*, *Trees* and  
*Perennial* Plants, the most natural and instructive *Hieroglyphics* of  
our expected *Resurrection* and *Immortality*, besides what they  
might conduce to the Meditation of the *living*, and the taking  
off our Cogitations from dwelling too intently upon more vain  
and sensual Objects; that *Custom* of *Burying* in *Churches*, and  
near about them (especially in great and populous *Cities*) be-  
ing both a *Novel* Presumption, undecent, and very prejudicial to  
health.

14. To make this *Discourse* the more absolute, we shall add a  
short recital of the most famous *Groves* which we find Celebrated  
in *Histories*; and those, besides many already mention'd, were  
such as being Consecrated both to *Gods* and *Men*, bore their Names:  
Amongst these are reckoned the Sacred to *Minerva*, *Isis*, *Latona*,  
*Cybele*, *Osiris*, *Æsculapius*, *Diana*, and especially the *Aricinian*,  
in which there was a goodly *Temple* erected, placed in the midst  
of an *Island*, with a vast *Lake* about it, a *Mount*, and a *Grotto*  
adorn'd with *Statues*, and irrigated with plentiful *Streams*: and  
this was that renowned *Recess* of *Numa*, where he so frequently  
conversed with his *Egeria* as did *Minos* in the *Cave* of *Jupiter*,  
and by whose pretended *Inspirations* they gain'd the deceived *Peo-  
ple*, and made them receive what *Laws* he pleas'd to impose upon  
them. To these we may joyn, the *Groves* of *Vulcan*, *Venus*, and  
the little youth *Cupid*: *Mars*, *Bellona*, *Bacchus*, *Sylvanus*, the  
*Muses*, and that near *Helicon* from the same *Numa*, their great  
*Patron*; and hence had they their Name *Camæna*. In this was  
the noble *Statue* of *Eupheme* Nurse to those *Poetical* Ladies; but  
so the *Feranian* and even *Mons Parnassus*, were thick shaded with  
*Trees*. Nor may we omit the more impure *Lupercal* *Groves* Sa-  
cred,

cred, or Prophan'd rather, yet most famous for their affording shelter and foster to *Romulus*, and his Brother *Rhemus*?

That of *Vulcan* was usually guarded by *Dogs*, like the Town of *S. Malos* in *Bretaigne*: The *Pinea Sylva* appertain'd to the *Mother* of the *Gods*, as we find in *Virgil*. *Venus* had several *Groves* in *Agypt*, and in the *Gnidian* Island, where once stood those famous *Statues* cut by *Praxiteles*; another in *Pontus*, where (if you'll believe it) hung up the *Golden Fleece* Meede of the bold *Adventurer*. Nor was the *Watry-King Neptune* without his *Groves*; the *Helicean* in *Greece* was his: So *Ceres*, and *Proserpine*, *Pluto*, *Vesta*, *Castor* and *Pollux* had such shady *Places* Consecrated to them; add to these the *Lebadian*, *Arfinoan*, *Paphian*, *Senonian*, and such as were in general dedicated to all the *Gods*, for

Gods have dwelt in Groves.

Habitant dii quoque Sylvas.

And these were as it were *Pantheons*. To the memory of famous *Men* and *Heros* were Consecrated the *Achilleean*, *Aglauran*, and those to *Bellerophon*, *Heſtor*, *Alexander*; and to others who disdained not to derive their Names from *Trees* and *Forests*; as *Sylvius* the *Posthumus* of *Aeneas*; divers of the *Albanian* Princes, and great Persons; *Stolon*, *Laura*, *Daphnis*, &c. And a certain Custom there was for the *Parents* to Plant a *Tree* at the *Birth* of an *Heir* or *Son*, preſaging by the growth and thriving of the *Tree* the prosperity of the *Child*: Thus we read in the life of *Virgil*, and how far his *Natalitial Poplar* had out-strip'd the rest of its *Contemporaries*. And the reason doubtless of all this was, the general repute of the Sanctity of those *Places*; for no sooner does the *Poet* speak of a *Grove*, but immediately some Consecration follows, as believing that out of those shady *Profundities*, some *Deity* must needs emerge,

*Quo possis viſo dicere Numen ineſt.*

ſo as *Tacitus* (ſpeaking of the *Germans*) ſays, *Lucos, & Nemora conſecrant, Deorumque nominibus appellant ſecretum illud, quod ſola reverentiâ vident*; To the ſame, *Pliny* l. 12. c. 1. *Arbores ſuere Numinum templa, &c.* in which (ſays he) they did not ſo much revere the *Golden*, and *Ivory* ſtatues, as the goodly *Trees*, and awful ſilence: And the Consecration of theſe *Nemorous* places we find in *Quintus Curtius*, and in what *Paulus Diaconus de Lege* relates of the *Longobards*, where the *Rites* are expreſs, allur'd as 'tis likely by the gloomineſs of the *Shade*, procerity and altitude of the *ſtem*, floridneſs of the *leaves* and other accidents, not capable of *Philosophizing* on the *Phyſical* Cauſes, which they deem'd ſupernatural, and plainly *divine*; ſo as to uſe the words of *Prudentius*,

Here all Religion paid; whoſe dark Retreats  
A ſacred awe does on their mind impreſs,  
To their Wild Gods—

Quos penes omnia ſacrum eſt, quicquid formido tremendum  
Suaserit horriſcos, quos prodigalia cogunt  
Monſtra Deos—

L. 2. Cont. Sym.

And



And this *deification* of their *Trees*, and amongst other things, for their *Age* and perennial viridity, says *Diodorus*, might spring from the manifold *use* which they afforded, and happily had been taught them by the *Gods*, or rather by some *God-like* persons, whom for their worth and the publick benefit they esteemed so; and that divers of them were voyc'd to have been *Metamorphoz'd* from *Men* into *Trees*, and again out of *Trees* into *Men*, as the *Arcadians* gloried in their *Birth*, when

Out of the teeming Bark of Oaks men burst,

*Genique virum, truncis, & rupto robore nati.*

which perhaps they fancied, by seeing men creep sometimes out of their Cavities, in which they often lodg'd and secur'd themselves;

For in th' Earths non-age under Heavens new frame,  
They suster liv'd who from Oaks rupture came.

*Quippe aliter tunc orbe novo caloque recenti  
Vivebant homines, qui rupto robore nati, &c.*

*Stapylton.*

*Juven. l. 2. S. 61*

Or as the sweet *Papinius*,

Fame goes that ye brake forth from the hard rind,  
When the new earth with the first feet was sign'd:  
Fields yet nor Houses doleful pangs reliev'd,  
But shady Ash the numerous births receiv'd,  
And the green Babe dropp'd from the pregnant Elm,  
Whom strange amazement first did over-whelm  
At break of day, and when the gloomy night  
Ravish'd the Sun from their pursuing sight,  
Gave it for lost——

———*Nemorum vos stirpe rigenti  
—Fama sacos, cum prima pedum vestigia tellus  
Admirata tulit, nondum arva, domusque ferebant  
Cruda puerperia, ac populos umbrosa creavit  
Fraxinus, & stat viridis puer excidit Orno:  
Hi lucis stupuisse vices, noctisque feruntur,  
Nubila, & occiduum longe Titana secuti  
Desperasse diem———*

almost like that which *Rinaldo* saw in the *Inchanted Forest*.

An aged Oak beside him cleft and rent,  
And from his fertile hollow womb forth went  
(Clad in rare weeds, and strange habiliment)  
A full grown Nymph.——

*Quercia gli appar, che per se stessa incisa  
Apra seconda il cavo ventre, e figlia.  
E n' esce suor vestita in strana guisa  
Ninfa d' età cresciuta.——*

*Canto 18.*

And that every great *Tree* included a certain tutelar *Genius* or *Nymph* living and dying with it, the *Poets* are full; a special instance we have in that prodigious *Oak* which fell by the fatal stroke of *Erisichthon*; but the *Hamadryads* it seems were immortal, and had power to remove, and change their wooden habitations.

15. We might here produce wonderful strange *Apparitions* of this nature, interceding for the standing, and life of *Trees*, when the *Ax* has been ready for Execution, as you may see in that *Hymn* In Phot. & Arcad. of *Callimachus*, *Pausanias*, and the famous story of *Parabius* related by *Apollonius* in 2. *Argonaut.* with the fearful *Catastrophe* of such as causelessly, and wantonly violated those goodly *Plantations* (from which *fables* arose, that of the *Dodonean* and *vocal Forests*, frequent in *Heathen Writers*) but by none so Elegantly as the witty *Ovid*, describing the Fact of the wicked *Erisichthon*.

---Who Gods despis'd,

--- *Qui numina divum*

Nor ever on their Altars sacrific'd, *Sperneret, & nullos aris adoleret*

*(honores &c.*

*M m 2*

*Who*

Who *Ceres* Groves with steel profan'd : Where stood  
 An old huge *Oak* ; even of it self a Wood.  
 Wreaths, Ribands, grateful Tables deckt his boughs  
 And sacred Stem ; the Dues of powerful Vows.  
 Full oft the *Dryades*, with Chaplets crown'd,  
 Danc't in the shade ; full oft they tript a Round  
 About his bole. Five Cubits three times told  
 His ample Circuit hardly could infold.  
 Whose stature other Trees as far exceeds,  
 As other Trees surmount the humble Weeds.  
 Yet this his Fury rather did provoke :  
 Who bids his Servants fell the Sacred *Oak*.  
 And snatches, while they paus'd, an *Ax* from one,  
 Thus storming : Not the *Goddeſs* lov'd alone ;  
 But, though this were the *Goddeſs*, she should down,  
 And sweep the Earth with her aspiring Crown.  
 As he advanc'd his Arms to strike, the *Oak*  
 Both sigh'd and trembl'd at the threatening stroke.  
 His Leaves and Acorns, pale together grew,  
 And colour-changing-branches sweat cold dew :  
 Then wounded by his impious hand, the Blood  
 Gush'd from th' incision in a purple flood :  
 Much like a mighty *Ox*, that falls before  
 The Sacred Altar, sprouting streams of gore.  
 On All amazement seiz'd : When one of all  
 The Crime deters, nor would his *Ax* let fall.  
 Contracting his stern brows ; Receive, said he,  
 Thy Pieties Reward ; and from the Tree  
 The stroke converting, lops his Head ; then strake  
 The *Oak* again ; from whence a Voice thus spake :  
 A *Nymph* am I, within this Tree inshrind,  
 Belov'd of *Ceres*, O prophane of mind,  
 Vengeance is near thee : With my parting breath,  
 I Prophesie, a Comfort to my Death.  
 He still his guilt pursues ; who over-throws  
 With Cables, and innumerable blows  
 The sturdy *Oak* ; which nodding long, down rush'd,  
 And in his lofty fall his fellows crush'd.

*Sandys.*

But a sad *Revenge* follows it, as the *Poet* will tell you ; and one  
 might fill a just *Volume* with the *Histories* of *Groves* that were vi-  
 olated by wicked Men, who came to fatal periods ; Especially those  
 upon which the *Mistle* grew, than which nothing was reputed  
 more sacred,

To Mistleto, go *Druid*, they did sing :

*Ad viscum Druidæ, Druidæ cantare solebant.*

for among such *Oaks* they usually dwelt,

— *Nemora*

— *Nemora alta remotis*  
*Incolitis Lucis* —

Lucan.

with whose leaves they adorn'd, and celebrated their religious *Rites*. The *Druids* says *Plinie l. 16. c. 4.* (for so they call their *Divines*) esteem nothing more venerable than *Misselto*, and the *Oak* upon which it grows, &c. But of *this* consult (besides the *Author*) *Mela*, *LaBantus*, *Eusebius de preparat. Evangel.* and the *Antiklaria* of *Pseudo-Plantius*, *Camden* and others; whilst as to that *Extrescence*, I am told of the disasters which happen'd to the two Men who (not long since) fell'd a goodly *Oak* near *Croydon*, upon which a branch of *Misselto* grew, which they sold: The one losing soon after his *Eye*, the other breaking his *Leg*, as if the *Hamadryads* had reveng'd the indignity.

It is reported that the *Minturensian Grove* was esteem'd so venerable, that a stranger might not be admitted into it; and the great *Xerxes* himself when he pass'd through *Achaia*, would not touch a *Grove* which was dedicated to *Jupiter*, Commanding his Army to do it no Violence, and the honours he did to one single (but a goodly) *Platanus* we have already mention'd. The like to this we find when the *Persians* were put to flight by *Pausanias*; though they might have sav'd their lives by it, as appears in the Story. The same reverence made that *Hercules* would not so much as tast the *Waters* of the *Agerian Groves* after he slew *Cacus*, though extremely thirsty.

— The Priestess said

(A purple Fillet binding her gray head)  
 Stranger, pry not, but quit this shady Seat,  
 Avant, and whilst thou safely maist, Retreat,  
 To men forbid, and by hard Sanction bound;  
 Far better other Springs were by thee found.

*Puniceo canas flamine violeta comas,  
 Parce oculis hospes, Lucòque abscele verendo;  
 Cede agendum, Et tuta limina linque fuga,  
 Interdicta viris, metuenda lege piatur,  
 Dii tibi dent alios fontes* —

Propert. l. 4.

Nor indeed in such places was it lawful to *Hunt*, unless it were to kill for *Sacrifice*, as we read in *Arrianus*; whence 'tis reported by *Strabo*, that in the *Ætolian Groves* Sacred to *Diana*, the *Beasts* were so tame, that the very *Wolves* and *Staggs* fed together like *Lambs*, and would follow a man licking his hands, and fawning on him. Such a *Grove* was the *Crotonian*, in which *Livy* writes, there was a spacious Field like *S. James's Park* stor'd with all sorts of *Game*. There were many *Forests* consecrated to *Jupiter*, *Juno*, and *Apollo*; especially the famous *Epidaphnes* near the *Syrian Antioch*, which was most incomparably pleasant, adorn'd with *Fountains* and rare *Statues*. There was to be seen the *Laurel* which had been his chaste *Mistress*, and in the Center of it his *Temple* and *Asylum*: Here it was *Cosroes* and *Julian* did *Sacrifice* upon several occasions as *Eusebius* relates, but could not with all their impious *Arts* obtain an *Answer*; because the holy *Babylas* had been interr'd near that *Oracle*, for which it was reputed so venerable; that there remained an express *Title* in the *Code de Cupressis ex Luco Daphnes non excidendis, vel venundandis*, that none should



Salmur. exor.  
Plin. Solin.

should either *fell*, or *sell* any of the *Trees* about it, which may serve for another Instance of their *Burying* in such places. The truth is, so exceedingly *Superstitious* they were and tender, that there was almost no meddling with these devoted *Trees*, and even before they did but *conlucare* and prune one of them, they were first to *Sacrifice*, lest they might offend in something ignorantly: But to *Cut down* was *Capital*, and never to be done away with any *Offering* whatsoever; and therefore *Conlucare* in *Authors*, is not (as some pretend) *Succidere*, but to *prune* the Branches only, and yet even *this* gentle tonsure of superfluities was reputed a kind of Contamination; and hence *Lucus coinquinari dicitur*, unless in the case of *Lightning*, when *Cælo tacti*, a whole Tree might quite be fell'd, as mark'd, by *Heaven* for the Fire. But of this sufficient: We could indeed fill many sheets with the *Catastrophe* of such as maliciously destroy'd *Groves* to feed either their revenge or avarice: See *Plutarch* in *Pericles*, and the saying of *Pompeius*: *Cicero* sharply reproves *G. Gabinus* for his prodigious spoil in *Greece*, and it was of late days held a piece of *Inhumanity* in *Charles the French King*, when he entred the *Frisons* after he had slain their *Leader*, to cut down their *Woods*, a punishment never inflicted by sober Princes, but to prevent *Idolatry* in the Old *Law*; and to shew the heinousness of disloyalty and *Treason* by latter *Sanctions*, in which case, and for *Terror*, even a *Traitors Woods* have become *Anathema*, as were easie to instance out of *Histories*.

16. But what shall we say then of our late prodigious *Spoilers*, whose furious devastation of so many goodly *Woods* and *Forests*, have bequeath'd an Infamy on their *Names* and *Memories* not quickly to be forgotten! I mean our unhappy *Usurpers*, and injurious *Sequestrators*; not here to mention the deplorable necessities of a Gallant and Loyal *Gentry*, who for their *Compositions* were (many of them) compell'd to add yet to this *Wast*, by an inhumane and unparallel'd *Tyranny* over them, to preserve the poor remainder of their *Fortunes*, and to find them *Bread*.

Nor was it here they desisted, when, after the Fate of that once beautiful *Grove* under *Greenwich-Castle*, (of late supply'd by his present *Majesty*.) the *Royal Walk* of *Elms* in *S. James's Park*,

*That living Gallery of aged Trees,*

it was once propos'd to the late *Council of State* (as they call'd it) to be cut down and sold, that with the rest of his *Majesties Houses* already demolished, and mark'd out for Destruction, his *Trees* might likewise undergo the same destiny, and no footsteps of *Monarchy* remain unviolated.

17. It is from hence you may calculate what were the *designs* of those excellent *Reformers*, and the care these great *States-men* took for the preservation of their *Country*, when being *Parties* in the *Booty* themselves, they gave way to so dishonourable and impolitic a *Wast* of that *Material*, which being left intire, or husbanded with discretion, had prov'd the best support and defence of it.

But

But this (say they) was the Effect of *War*, and in the height of our *Contentions*. No, it was a *late* and *cold deliberation*, and long after all had been subdu'd to them; nor could the most implacable of *Enemies* have express'd a Resolution more barbarous.

We have spoken of the great *Xerxes*, that passing Conquerour through *Achaia*, he would not suffer his *Army* to violate so much as a *Tree* of his *Adversaries*; and have sufficiently observed from the *Antients*, that the *Gods* did never permit them to escape unpunish'd who were injurious to *Groves*. What became of *Agamemnon's* Host after his Spoil of the *Woods* at *Aulis*? Histories tell us *Cleomenes* died mad: The *Temesean Genius* became proverbial; and the destructive fact that the enraged *Caesar* perpetrated on the *Massilian Trees*, went not long unreveng'd, thus related by the *Poet*, and an illustrious *Record* of all we have hitherto produc'd, to assert their Veneration.

*Lucus erat longo nunquam violatus ab aeo, &c.*

Lucan. l. 3.

A Wood untouch'd of old was growing there  
Of thick-set Trees, whose boughs spreading and fair;  
Meeting, obscured the inclosed *Air*,  
And made dark shades exiling *Phœbus* Rayes:  
There no rude Fawn, nor wanton Sylvan plays;  
No Nymph disports, but cruel Deities  
Claim barbarous Rites, and bloody Sacrifice:  
Each Tree defil'd with humane blood; if we  
Believe Traditions of Antiquitie:  
No Bird dares light upon those hollowed boughs;  
No Beasts make there their dens; no wind there blows;  
No lightning falls: a sad religious awe,  
The quiet Trees unstirr'd by wind do draw.  
Black water Currents from dark Fountains flow:  
The Gods unpolish'd Images do know  
No art, but plain, and formless trunks they are,  
Their moss and moldiness procures a fear:  
The common figures of known Deities  
Are not so fear'd: not knowing what God 'tis,  
Makes him more awful: by relation  
The shaken Earths dark caverns oft did grogne:  
Fall'n *Tew-trees* often of themselves would rise:  
With seeming fire oft flam'd th' unburned Trees:  
And winding dragons the cold *Oaks* embrace,  
None give near worship to that baleful place;  
The People leave it to the Gods alone.  
When black night reigns, or *Phœbus* gilds the Noon,  
The Priest himself trembles, afraid to spy  
In th' awful Woods its Guardian-Deity.

But now *Erisichton*-like, and like him in Punishment; for his was Hunger, *Caesar's* Thirst, and thirst of Humane Blood, reveng'd soon after in his *own*.

The

The *Wood* he bids them fell, not standing far  
 From all their Works: untoucht in former War,  
 Among the other bared Hills it stands  
 Of a thick growth; the Souldiers valiant hands  
 Trembled to strike, mov'd with the Majestie,  
 And think the *Ax* from off the Sacred Tree  
 Rebounding back, would their own bodies wound:  
 Th' amazement of his Men when *Cæsar* found;  
 In his bold hand himself an *Hatchet* took,  
 And first of all assaults a lofty *Oak*,  
 And having wounded the Religions Tree,  
 Let no man fear to fell this Wood (quoth he)  
 The guilt of this Offence let *Cæsar* bear, &c. *May.*

and so he did soon after, carrying ('tis thought) the *Maledictions*  
 of the incensed *Gauls* to his Funeral pile,

The Gods thus injur'd, unreveng'd does go?

For who

*Quis enim lesos impune putaret  
 Esse Deos*

*Que tibi sa-  
 clorum penas  
 instare tuorum  
 Vaticinor —  
 Vide Met. l. 8.  
 Apollon. l. 2.  
 Argonaut.  
 Prosterne  
 quercum fune-  
 ram quam sibi  
 Nympha Pigno-  
 ribusque suis  
 fecit —*

18. But lest this be charg'd with *Superstition*, because the *In-  
 stances* are *Heathen*: It was a more noble and remarkable, as well  
 as recent *Example*, when at the *Siege* of *Breda*, the late Famous  
 General *Spinola* Commanded his *Army* not to violate a *Tree* of a  
 certain *Wood* belonging to the *Prince* of *Orange* there, though  
 a reputed *Traitor*, and in open defiance with his Master. In sum,  
 we read that when *Mithridates* but deliberated about the cutting  
 down of some stately *Trees* which grew near *Patara*, a *City* of  
*Lycia*, though necessitated to it for the building of Warlike  
*Engines* with them, being terrifi'd in a *Vision*, he desisted from his  
 purpose. It were to be wish'd *these*, or the like *Exemplers*, might  
 have wrought some *Effects*, upon the Sacrilegious *Purchasers*, and  
 disloyal *Invaders* in this Iron-Age amongst us, who have lately  
 made so prodigious a spoyl of those goodly *Forests*, *Woods*, and  
*Trees* (to gratifie an impious and unworthy *Avarice*) which be-  
 ing once the Treasure and Ornament of this *Nation*, were doubt-  
 less reserved by our more prudent *Ancestors* for the repairs of  
 our floating *Castles*, the *safeguard* and *boast* of this renowned  
*Island*, when *Necessity*, or some imminent Peril should threaten it,  
 or call for their Assistance; and not to be devoured by these im-  
 provident *Wretches*, who, to their eternal Reproach, did (with  
 the *Royal Patrimony*) swallow likewise *Gods own Inheritance*;  
 but whose *Sons*, and *Nephews* we have liv'd to see as hastily disgorge  
 them again; and with it all the rest of their Holy *Purchases*, which  
 otherwise they might securely have enjoy'd. But this, in terro-  
 rem only, and for Caution to *Posterity*, whiles we leave the  
*Guilty*, and those who have done the Mischiefs, to their proper  
*Scorpions*, and to their *Erisichthonian*-fate, or that of the inexora-  
 ble *Parabius*, the vengeance of the *Dryads*, and to their *Tutelar*  
*better Genius*, if any yet remain, who love the solid *Honour* and  
*Ornament* of their *Countray*: For what could I say less, *Thyogonis*,  
 and



and \* *Wood-born* as I am, in behalf of those *Sacred Shades*, which both grace our *Habitations*, and protect our *Nation* ?

\* At *Wootton* in *Surrey* : For so in all ages

from *Trees* have been denominated whole Countries, Regions, Cities and Towns ; as *Cyparissa* in *Greece*, *Cerasus* in *Pontus*, *Laurentum* in *Italy*, *Agræbins* in *Attica*. Ports, Mountains and eminent Places ; as the *Viminalis*, *Æsculetum*, &c. The reason is obvious, from the spontaneous growth and abounding of such *Trees* in the respective Soyles.

One thing more I think not impertinent to hint, before I take my leave of this *Chapter*, concerning the Use of *Standing Groves* ; That in some places of the world, they have no other *Water* to drink, than what their *Trees* afford them ; not only of their proper juice ( as we have noted ) but from their attraction of the *Evening Moisture*, which impends in the shape of a *Cloud* over them : such a *Tuft* of *Trees* is in the *Island* of *Ferro*, of which consult the learned *Isaac Vassius* upon *Pomponius Mela*, and *Magnennus de Manna* ; The same likewise hapning in the *Indies* ; so that if their *Woods* were once destroy'd, they might perish for want of *Rains* ; upon which account *Barbados* grows every year more torrid, and has not near the *Rain* it formerly enjoy'd, when it was better furnished with *Trees* ; and so in *Jamaica* at *Guna-ba*, the *Rains* are observ'd to diminish, as their *Plantations* extend ; the like I could tell you of some parts of *England* not far from hence.

19. But I acknowledge how easie it is to be lost in this *Wood*, and that I have hardly power to take off my *Pen* whilst I am on this delightful *Subject* : For what more august, more charming and useful, than the culture and Preservation of such goodly *Plantations*,

That shade to our Grand-Children give.

— Seris futura nepotibus umbram.

and afford so sweet, and so agreeable refreshment to our Industrious *Wood-man*,

When He, his wearied Limbs has laid  
Under a florid *Platan* Shade.

Cum post laboris sub *Platano* cubat  
Virentis umbræ

Cloud.

or some other goodly spreading *Trees*, such as we told you stopt the *Legions* of a proud *Conquerour*, and that the wise *Socrates* swore by ; That *Passenius Crispus* did sacrifice to, and the honours of his Gods.

20. But whilst we condemn this Excess in them ; *Christians*, and true *Philosophers* may be instructed to make use of these *Enjoyments* to better purposes, by contemplating the *Miracles* of their Production and structure : And what *Mortal* is there so perfect an *Atomist*, who will undertake to detect the thousandth part, or point of so exile a *Grain* ; as that insensible rudiment, or rather balituous spirit, which brings forth the lofty *Fir-tree*, and the spreading *Oak* ? That *Trees* of so enormous an height and magnitude, as we find some *Elms*, *Planes*, and *Cypresses* ; some hard as *Iron*, and solid as *Marble* (for such the *Indies* furnish many) should be swaddl'd, and involv'd within so small a dimension (if a

N n

point

Epist. 53.

point may be said to have any) without the least luxation, confusion or disorder of Parts, and in so weak and feeble a substance; being at first but a kind of tender *mucilage*, or rather rottenness, which so easily dissolves and corrupts *Substances* so much *harder*, when they are buried in the moist Womb of the *Earth*, whilst *this* tender, and flexible as it is, shall be able in time to displace and rent in sunder whole *Rocks* of stones, and sometimes to cleave them beyond the force of *Iron Wedges*, so as even to remove *Mountains*? For thus no *Weights* are observ'd able to suppress the victorious *Palm*; And thus, our *Tree* (like *Man* whose inverted *Symbol* he is) being sown in *corruption*, rises in glory by little and little ascending into an hard erect *Stem* of comely dimensions, into a solid *Tower* as it were; and that which but lately a single *Ant* would easily have born to his little *Cavern*, now capable of resisting the fury, and braving the Rage of the most impetuous *storms*, *Magni mehercle artificis, clausisse totum in tam exiguo* (to use *Seneca's* expression) *& horror est consideranti.*

21. Contemplate we again, What it is which begins this motion or *flame*, causing it first to radiate in the *Earth*, and then to display its Top in the *Air*, so different *Pales* (as I may call them) in such different *Mediums*. How it elects, and then intro-sumes its proper food, and gives *Suck*, as it were, to its yet tender *Infant*, till it have strength and force to prey on, and digest the more solid *Juices* of the *Earth*; for then, and not 'till then, do the *Roots* begin to harden: Consider how it assimilates, separates, and distributes these several supplies; how it concocts, transmutes, augments, produces and nourishes without separation of *Excrements* (at least to us visible) and generates its like, without violation of *Virginity*: By what exquisite percolations, and fermentations it proceeds; for the *Heart*, *Fibers*, *Veins*, *Rind*, *Branches*, *Leaves*, *Blossoms*, *Fruit*; for the *strength*, *Colour*, *Tast*, *Odour* and other stupendious *Qualities*, and distinct *Faculties*, some of them so repugnant and contrary to others; yet in so uniform, and successive a *Series*, and all this perform'd in the dark, and those secret Recesses of *Nature*. *Quid Foliorum describam diversitates?* What shall we say of the *Mysterious* forms, variety, and variegation of the *Leaves* and *Flowers*, contriv'd with such *Art*, yet without *Art*; some round, others long, Oval, *Multangular*, indented, crisped, rough, smooth and polished, soft and flexible at every tremulous blast, as if it would drop in a moment, and yet so obstinately adhering, as to be able to contest against the fiercest *Winds*, that prostrate mighty Structures, raising *Hurricanes*, the violence whereof whole *Fleets* and *Countries* do often feel; yet I say, continually making War, and sometimes joyning Forces with steeming showers, against the poor *Leaf*, tyed on by a slender *stalk*! there it abides 'till *God* bids it fall: For so the wise *Disposer* of Things has plac'd it, not only for *Ornament*, but use and protection both of *Body* and *Fruit*, from the excessive heat of *Summer*, and colds even of the sharpest *Winters*, and their immediate impressions; as we find it in all such *Places* and *Trees*, as like the blessed and good  
man,

man, have always *Fruit* upon them, ripe, or preparing to mature; such as the *Pine*, *Fir*, *Arbutus*, *Orange* and most of those which the *Indies* and more *Southern* Tracts plentifully abound in, where *Nature* provides this continual shelter, and clothes them with perennial Garments.

22. Let us again examine with what care the *Seeds*, those little *Souls* of Plants, *in eorum exilitas* (as one says) *vix locum inveniunt* (in which the whole, and compleat *Tree*, though invisible to our dull sense, is yet perfectly and intirely wrapp'd up) are preserv'd from *avolation*, diminution and detriment; expos'd, as they seem to be, to all those accidents of *Weather*, *storms* and *rapacious* Birds, in their spiny, arm'd and compacted *Receptacles*; where they sleep as in their *Causés*, 'till their *Prisons* let them gently fall into the embraces of the *Earth*, now made pregnant with the *Season*, and ready for another *Burthen*: For at the time of *Year* she fails not to bring them forth; and with what delight have I beheld this tender, and innumerable Off-spring *repullulating* at the *Feet* of an aged *Tree*! from whence the *Suckers* are drawn, transplanted and educated by humane *Industry*, and forgetting the *fertility* of their *Nature*, become *civiliz'd* to all his *Employments*.

23. Can we look on the prodigious quantity of *Liquor*, which one poor wounded *Birch* will produce in a few *hours*, and not be astonish'd how some *Trees* should in so short a space, *Weep* more than they *weigh*? and that so dry, so feeble and wretched a *branch* as that which bears the *Grape*, should yield a *Juice* that *Cheers both God and Man*? That the *Pine*, *Fir*, *Larch*, and other *Resinous* *Trees*, Planted in such rude, and uncultivated places, amongst *Rocks* and dry *Pumices*, should transude into *Turpentine*, and pearl out into *Gums*, and pretious *Balms*?

24. There are ten Thousand Considerations more, besides that of their *Medicinal* and *Sanative* properties, and the *Mechanical* *Uses* mention'd in this *Treatise*, which a *Contemplative* Person may derive from the *Groves* and the *Woods*; all of them the Subject of *Wonder*; And though he had only the *Palm* or the *Cocco*, which furnishes a great Part of the *World* with all that even a *Voluptuous* Man can need, or almost desire, it were sufficient to employ his *Meditations* and his *Hands*, as long as he had to live, though his *years* were as many as the most aged *Oak*: But a *Wise*, and a *Thinking* Man can need none of these *Topics*, in every *Hedge*, and every *Field* they are before him; and yet we do not admire them, because they are Common, and obvious: Thus we fall into the just reproach given by one of the *Philosophers* (introduc'd by the *Oratour*) to those who slighted what they saw every-day, because they every-day saw them; *Quasi Novitas nos magis quam magnitudo rerum, debeat ad exquirendas causas excitare*: As if Novelty only should be of more force to ingage our enquiry into the *Causés* of Things, than the *Worth* and *Magnitude* of the *Things* themselves.

*Cic. de Nat.  
deor. L. 2.*



Renati Rapini  
S. J.  
Hortorum liber  
Secundus.  
NEMUS.

I conclude this Chapter, and whole Discourse with that Incomparable Poem of Rapinus (made English by my Son) as Epitomizing all we have said.

*Me nemora, atque omnis nemorum pulcherrimus ordo  
Et spacia, umbrandum late fundenda per hortum  
Invitant, &c.*

Long rows of Trees and Woods my Pen invite,  
With shady Walks a Gardens chief delight:  
For nothing without them is pleasant made;  
They beauty to the ruder Country add.  
Ye Woods and spreading Groves afford my Muse  
That bough, with which the sacred Poets use  
To adorn their brows; that by their pattern led,  
I with due Laurels may impale my head.

Methinks the Oaks their willing tops incline,  
Their trembling leaves applauding my design;  
With joyful murmurs, and unforced assent,  
The Woods of Gaul accord me their consent.  
*Citheron I, and Menalus despoil,*  
Of grac't by the Arcadian Deities;  
I, nor *Molochus*, or *Dodona's* Grove,  
Or thee crown'd with black Oaks, *Calydon* love;  
*Cyllene* thick with Cypress too I flye;  
To France alone my Genius I apply,  
Where noble Woods in ev'ry part abound,  
And pleasant Groves commend the fertile ground.

If on thy native Soil thou dost prepare  
To erect a Villa, you must place it there,  
Where a free prospect do's it self extend:  
Into a Garden whence the Sun may lend  
His influence from the East; his radiant heat  
Should on your house through various windows beat:  
But on that side which chiefly open lies  
To the North-wind, whence storms and show'rs arise,  
There plant a wood; for, without that defence,  
Nothing resists the Northern violence.  
While with destructive blasts o're cliffs and hills  
Rough Boreas moves, and all with murmurs fills;  
The Oak with shaken boughs on mountains rends,  
The Valleys roar, and great Olympus bends.  
Trees therefore to the winds you must expose,  
Whose branches best their pow'ful rage oppose.

Thus woods defend that part of Normandy,  
Which spreads it self upon the British Sea.  
Where trees do all along the Ocean side  
Great Villages and Meadows too divide.

But now the means of raising woods I sing;  
Though from the parent Oak young shoots may spring,  
Or may transplanted flourish, yet I know  
No better means than if from seed they grow.  
'Tis true this way a longer time will need,  
And Oaks but slowly are produc'd by seed:  
Yet they with far the happier shades are blest;  
For those that rise from Acorns, as they best  
With deep-fixt roots beneath the earth descend,  
So their large boughs into the air ascend.  
Perhaps because, when we young Sets translate,  
They lose their virtue, and degenerate,  
While Acorns better thrive, since from their birth  
They have been more acquainted with the earth.

Thus we to Woods by Acorns Being givee  
But yet before the ground your Seed receive,  
To dig it first employ your Labourer;  
Then level it; and, if young shoots appear  
Above the ground, sprung from the cloven bud;  
If th' earth be planted in the Spring, 'tis good  
Those weeds by frequent culture to remove,  
Whose roots would to the blossom hurtful prove.  
Nor think it labour lost to use the Plow;  
By Dung and Tillage all things fertile grow.

There are more ways than one to plant a Grove,  
For some do best a rude confusion love:  
Some into even squares dispose their trees,  
Where ev'ry side do's equal bounds possess.  
Thus boxen legions with false arms appear  
At Chæss, and represent a face of War.  
Which sport to Schaccia the Italians owe;  
The painted frames alternate colours show.  
So should the field in space and form agree;  
And should in equal bounds divided be.

Whether you plant young Sets, or Acorns sow  
Still order keep; for so they best will grow.  
Order to ev'ry tree like vigour gives,  
And room for the aspiring branches leaves.

When with the leaf your hopes begin to bud,  
Banish all wanton Cattle from the wood.  
The browsing Goat the tender blossom kills;  
Let the swift Horse then neigh upon the hills,  
And the free Herds still in large Pastures tread;  
But not upon the new-sprung branches feed.  
For whose defence Inclosures should be made  
Of twigs, or wattle into rills contriv'd.  
When ripening time has made your trees dilate,  
And the strong roots do deeply penetrate,  
All the superfluous branches must be fell'd,  
Lest the oppressed trunk should chance to yield  
Under the weight, and so its spirit lose  
In such excrescencies; but as for those  
Which from the stock you cut, they better thrive,  
As if their ruine caus'd them to revive.  
And the slow Plant, which scarce advanc'd its head,  
Into the air its leavy boughs will spread.

When from the fastned root it springs amain,  
And can the fury of the North sustain;  
On the smooth bark the shepherds should make  
Their rural strifes, and there their verses write.

But let no impious axe prophane the woods,  
Or violate the sacred shades; the Gods  
Themselves inhabit there. Some have beheld  
Where drops of blood from wounded Oaks distill'd:  
Have seen the trembling boughs with horror shake!  
So great a conscience did the Ancients make  
To cut down Oaks, that it was held a crime  
In that obscure and superstitious time,

For

For *Driopius* Heaven did provoke,  
By daring to destroy th' *Amonian* Oak;  
And with it it's included *Dryad* too:  
Avenging *Ceres* here her faith did show  
To the wrong'd Nymph; while *Erifichthon* bore  
Torments, as great as was his crime before.  
Therefore it well might be esteem'd no less  
Than Sacrilege, when ev'ry dark recess,  
The awful silence, and each gloomy shade,  
Was sacred by the zealous vulgar made,  
When e're they cut down Groves, or spoil'd the Trees,  
With gifts the *Antients* *Pales* did appease.

Due honours once *Dodona's* Forest had,  
When Oracles were through the Oaks convey'd.  
When woods instructed Prophets to foretell,  
And the decrees of Fate in Trees did dwell.

If the aspiring Plant large branches bear,  
And Beeches with extended arms appear;  
There near his flocks upon the cooler ground  
The Swain may lie, and with his Pipe resound  
His loves; but let no vice these shades disgrace:  
We ought to bear a reverence to the place.  
The boughs, th' unbroken silence of a wood,  
The leaves themselves demonstrate that some God  
Inhabits there, whose flames might be so just,  
To burn those groves that had been fir'd by lust.

But through the woods while thus the Rusticks sport,  
Whole flights of Birds will thither too resort;  
Whose different notes and murmurs fill the air:  
Thither sad *Philomela* will repair;  
Once to her sister the complain'd, but now  
She warbles forth her grief on ev'ry bough:  
Fills all with *Treus* crimes, her own hard fate;  
And makes the melting rocks compassionate.  
Disturb not birds which in your trees abide,  
By them the will of Heav'n is signified:  
How oft from hollow Oaks the boading Crow,  
The winds and future tempests do's foreshow!  
Of these the wary Plowman should make use;  
Hence observations of his own deduce:  
And so the changes of the weather tell.  
But from your Groves all hurtful birds expel.

When e're you plant, through Oaks your Beech  
The hard Male-oak, and lofty *Cerrus* choose. (diffuse;  
While *Esculus* of the mast-bearing kind,  
Chief in *Illician* Groves we always find.  
For it affords a far extending shade;  
Of one of these sometimes a wood is made.  
They stand unmov'd, though winter do's assail,  
Nor more can winds, or rain, or storms prevail.

To their own race they ever are inclin'd,  
And love with their associates to be join'd.  
When Fleets are rigg'd, and we to fight prepare,  
They yield us Plank, and furnish arms for war.  
Fewel to fire, to Plowmen Plows they give,  
To other uses we may them derive.  
But nothing must the sacred Tree prophane:  
Some boughs for Garlands from it may be ta'en  
For those whose arms their Country-men preserve,  
Such are the honours which the Oaks deserve.

We know not certainly whence first of all  
This Plant did borrow its original.  
Whether on *Ladon*, or on *Menalus*  
It grew, if sat *Chaonius* did produce

It first, but better from our Mother Earth,  
Than modern rumours we may learn their birth.  
When *Jupiter* the worlds foundation laid,  
Great Earth-born Giants Heaven did invade.  
And *Jove* himself, (when these he did subdue,)  
His lightning on the factious brethren threw.  
*Tillus* her sons misfortunes do's deplore;  
And while she cherishes the yet-warm gore  
Of *Rhæcus* from his monstrous body grows,  
A vaster trunk, and from his breast arose  
A hardned Oak; his shoulders are the same,  
And Oak his high exalted head became.  
His hundred arms which lately through the air  
Were spread, now to as many boughs repair.  
A sevenfold bark his now stiff trunk does biad;  
And where the Giant stood, a Tree we find.  
The earth to *Jove* straight consecrates this Tree,  
Appeasing so his injur'd Deity;  
Then 'twas that man did the first Acorns eat.  
Although the honour of this Plant be great,  
Both for its shade, and that it sacred is;  
Yet when its branches shoot into the Skies,  
Let them take heed, while with his brandish'd flame,  
The Thund'rer rages, shaking Natures frame,  
Left they be blasted by his pow'rful hand,  
While Tamarisks secure, and Mirtles stand.

The other parts of woods I now must sing;  
With Beech, and Oak, let Elm, and Linden spring.  
Nor may your Groves the Alder-tree disdain,  
Or Maple of a double-colour'd grain.  
The fruitful Pine, which on the mountain stands,  
And there at large its noble front expands;  
Thick-shooting Hazle, with the Quick-beam set,  
The Pitch-tree, Withy, Lotus ever wet;  
With well-made trunk here let the Cornel grow,  
And here *Orician* *Terebinthus* too;  
And warlike Ash: but Birch and Yew repress;  
Let Pines and Firs the highest hills possess:  
Brambles and Brakes fill up each vacant space  
With hurtful thorns; in your fields Walnuts place,  
And hoary Junipers, with Chestnuts good,  
With hoops to barrel up *Lyens* blood.

The difference which in planting each is found,  
Now learn; since th' Elm with happy verdure's  
crown'd:

Since its thick branches do themselves extend,  
And a fair bark do's the tall trunk commend;  
With rows of Elm your garden or your field  
May be adorn'd, and the Suns heat repell'd.  
They best the borders of your walks compose;  
Their comely green still ornamental shows.  
On a large flat continued ranks may rise,  
Whose length will tire our feet, and bound our eyes.  
The Gardens thus of *Fountain-bleau* are grac'd  
By spreading Elms, which on each side are plac'd.  
Where endless walks the pleas'd spectator views,  
And ev'ry turn the verdant Scene renews.

The sage *Corycian* thus his native field  
Near swift *Oebalian* *Galesus* till'd.  
A thousand ways of planting Elms he found;  
With them he would sometimes inclose his ground:  
Oft in directer lines to plant he chose;  
From one vast tree a numerous offspring rose.  
Each younger Plant with its old Parent vies,  
And from its trunk like branches still arise.  
They hurt each other if too near they grow;  
Therefore to all a proper space allow.

The *Thracian Bard* a pleasing Elm-tree chose,  
Nor thought it was below him to repose  
Beneath its shade, when he from hell return'd,  
And for twice-lost *Eurydice* so mourn'd.  
Hard by cool *Helius Rhodop*' does aspire;  
The Artist, here, no sooner touch'd his lyre,  
But from the shade the spreading boughs drew near,  
And the thick trees a sudden wood appear.  
Holm, Withy, Cypress, Plane trees thither prest:  
The prouder Elm advanc'd before the rest;  
And shewing him his wife, the Vine, advis'd,  
That Nuptial Rites were not to be despis'd.  
But he the counsel scorn'd, and by his hate  
Of Wedlock, and the Sex, incur'd his fate.

High shooting *Linden* next exacts your care;  
With grateful shades to those who take the air.  
When these you plant, you still should bear in mind  
*Philemon* and chaste *Baucis*: These were join'd  
In a poor Cottage, by their pious love,  
Whose sacred ties did no less lasting prove,  
Than life it self. They *Jove* once entertain'd,  
And by their kindness so much on him gain'd;  
That, being worn by times devouring rage,  
He chang'd to trees their weak and useless age.  
Though now transform'd, they Male and Female are;  
Nor did their change ought of their Sex impair.  
Their Timber chiefly is for Turners good;  
They soon shoot up, and rise into a wood.

Respect is likewise to the Maple due,  
Whose leaves, both in their figure, and their hue,  
Are like the *Linden*; but it rudely grows,  
And horrid wrinkles all its trunk inclose.

The Pine, which spreads it self in ev'ry part,  
And from each side large branches does impart,  
Addes not the least perfection to your Groves;  
Nothing the glory of its leaf removes.  
A noble verdure ever it retains,  
And o're the humbler plants it proudly reigns.  
To the Gods Mother dear; for *Cybele*  
Turn'd her beloved *Atys* to this Tree.  
On one of these vain-glorious *Marsyas* died,  
And paid his skin to *Phæbus* for his pride.  
A way of boring holes in Box he found,  
And with his artful fingers chang'd the sound.  
Glad of himself, and thirsty after praise,  
On his shrill Box he to the shepherds plays.  
With thee, *Apollo*, next he will contend;  
From thee all charms of musick do descend.  
But the bold Piper soon receiv'd his doom;  
(*who strive with Heaven never overcome.*)  
A strong made nut their apples fortifies,  
Against the storms which threaten from the Skies.  
The trees are hardy, as the fruits they bear,  
And where rough winds the rugged mountains tear,  
There flourish best: the lower vales they dread,  
And languish if they have not room to spread.

Hazle dispers'd in any place will live:  
In stony grounds wild Ash, and Cornel thrive;  
In more abrupt recesses these we find,  
Spontaneously expos'd to rain and wind.

Alder, and Withy, cheerful streams frequent,  
And are the Rivers only ornament.  
If ancient Fables are to be believ'd,  
These were associates heretofore, and liv'd

On fishy Rivers, in a little Boat,  
And with their Nets their painful living got.  
The Festival approach'd; with one consent  
All on the Rites of *Pales* are intent:  
While these unmindful of the Holy-day,  
Their Nets to dry upon the shore display.  
But vengeance soon th' offenders overtook,  
Persisting still to labour in the Brook.  
The angry Goddess fix'd them to the shore,  
And for their fault doom'd them to work no more.  
Thus to eternal idleness condemn'd;  
They felt the weight of Heaven, when condemn'd.  
The moisture of those streams by which they stand,  
Indues them both with power to expand  
Their leaves abroad; leaves, which from guilt look  
pale;  
In which the never-ceasing Frogs bewail.

Let lofty hills, and each declining ground,  
(For there they flourish) with tall Firs abound.  
Layers of these cut from some ancient Grove,  
And buried deep in mold, in time will move  
Young shoots above the earth, which soon disdain  
The Southern blasts, and launch into the Main.

But in more even fields the Ash delights,  
Where a good soil the gen'rous Plant invites.  
For from an Ash, which *Pelion* once did bear,  
Divine *Achilles* took that happy Spear,  
Which *Hector* kill'd; and in their Champions Fate  
Involv'd the ruine of the *Trojan* State.  
The Gods were kind to let brave *Hector* dye  
By arms, as noble, as his enemy.  
Ash, like the stubborn Heroe in his end,  
Always resolves rather to break than bend.

Some tears are due to the *Heliades*;  
Those many which they shed deserve no less.  
Griev'd for their brothers death in Woods they range,  
And worn with sorrow into Poplars change.  
By which their grief was rend'ed more divine,  
While all their tears in precious Amber shine.  
These, with your other Plants, still propagate:  
'Tis true indeed they are appropriate  
To *Italy* alone, and near the *Po*,  
Who gave them their first being, best they grow.

Into your Forests shady Poplars bring,  
Which from their seed with equal vigor spring.  
Rich Groves of Ebony let *India* show;  
*Judea* Balsoms which in *Gilead* flow:  
*Persia* from trees her silken Fleeces comb;  
*Arabia* furnish the *Sabeen* Gum;  
Whose odours sweetness to our Temples lend,  
And at the Altar with our pray'rs ascend:  
Yet I the Groves of *France* do more admire,  
Which now on Meads, and now on hills aspire.  
I not the Wood-nymph, nor the Pontick Pine  
Esteem, which boasts the splendor of its Line;  
Or those which old *Lyceum* did adorn;  
Or Box on the *Cytorian* mountain born:  
Th' *Idean* Vale, or *Erimanthian* Grove,  
In me no reverence, no horror move;  
Since I no trees can find so large, so tall,  
As those which fill the shady Woods of *Gaul*.

When from the cloven bud young boughs proceed,  
And the Mast-bearing trees their leaves do spread;  
The pestilential air oft vitiates  
The seasons of the year, and this creates

Whole



Whole swarms of Vermin, which the leaves assail,  
And on the woods in num'rous armies fall.  
Creatures in different shapes together joyn'd,  
The horrid Erue's, Palmer-worm design'd  
With its pestil'rous odours to annoy  
Your Plants, and their young offspring to destroy,  
Remember then to take these plagues away,  
Left they break out in the first show'rs of May.

From planting new and lopping aged trees,  
The prudent Ancients bid us never cease:  
Thus no decay is in our Forests known;  
But in their honour we preserve our own.  
Thus in your fields a sudden race will rise,  
Which with your Nurseries will yield supplies;  
That may again some drooping Grove renew:  
For trees like men have their Successions too.

Their solid bodies worms and age impair,  
And the vast Oak gives place to his next heir.  
While such designs employ your vacant hours,  
As ordering your woods, and shady bow'rs;  
Despise not humbler Plants, for they no less,  
Than trees, your Gardens beauty do increase.  
With what content we look on Myrtle Groves!  
On verdant Laurels! There's no man but loves  
To find his Limon, with Acanthus, thrive.  
To see the lovely *Phyllirea* live;  
With *Oleander*. Ah! to what delights  
Shorn Cypress, and sweet *Gelsemium* invites.

If any Plain be near your Garden found,  
With Cypress, or with Horn-beam hedge it round.  
Which in a thousand Mazes will conspire,  
And to recesses unperceiv'd retire.  
Its branches, like a wall, the paths divide;  
Affording a fresh Scene on ev'ry side.  
'Tis true, that it was honour'd heretofore;  
But order quickly made it valued more,  
By its thorn leaves, and those delights which rose  
From the distinguish'd forms in which it grows,  
To some cool Arbor, by the ways deceit,  
Allur'd, we haste, or some oblique retreat;  
Where underneath its umbrage we may meet  
With sure defence against the raging heat.

Though Cypresses contiguous well appear,  
They better shew if planted not so near.  
And since to any shape, with ease, they yield,  
What bound's more proper to divide a field?  
Repine not *Cyparissus*, then in vain;  
For by your change you glory did obtain.

*Sylvanus* and this Boy with equal fire  
Did heretofore a lovely Hart admire;  
While in the cooler Pastures once it fed,  
An arrow shot at random struck it dead.  
But when the youth the dying beast had found,  
And knew himself the author of the wound,  
With never ceasing sorrow he laments,  
And on his breast his grief and anger vents.  
*Sylvanus* mov'd with the poor creature's fate,  
Converts his former love to present hate.  
And no more pity in his angry words,  
Than to himself th' afflicted youth affords.  
Weary of life, and quite oppress'd with woe,  
Upon the ground his tears in channels flow:  
Which having water'd the productive earth,  
The Cypress first from thence deriv'd its birth;

With *Sylvan's* aid; nor was it only meant  
T' express our sorrow, but for ornament.  
Chiefly when growing low your fields they bound,  
Or when your Gardens *Avenues* are crown'd  
With their long rows; sometimes it serves to hide  
Some Trench declining on the other side.  
Th' unequal branches always keep that green,  
Of which its leaves are ne're dejected seen.  
Though shook with storms yet it unmov'd remains,  
And by its trial greater glory gains.

Let *Phyllirea* on your walls be plac'd,  
Either with wyre, or slender twigs made fast.  
Its brighter leaf with proudest *Aras* vies,  
And lends a pleasing object to our eyes.  
Then let it freely on your walls ascend,  
And there its native Tapestry extend.

Nor knows he well to make his Garden shine  
With all delights, who fragrant *Jasmines*  
Neglects to cherish, wherein heretofore  
Industrious Bees laid up their precious store.  
Unless with poles you fix it to the wall,  
Its own deceitful trunk will quickly fall.  
These shrubs, like wanton Ivy, still mount high;  
But wanting strength on other props rely.  
The pliant branches which they always bear,  
Make them with ease to any thing adhere.  
The pleasing odors which their flow'rs expire,  
Make the young Nymphs and Matrons them desire,  
Those to adorn themselves withal; but these  
To grace the Altars of the Deities.

With foreign *Jasmines* be also stor'd  
Such as *Iberian* Valleys do afford;  
Those which we borrow from the *Portuguese*;  
With them which from the *Indies* o're the Seas  
We fetch by ship; in each of which we find  
A difference of colour, and of kind.  
Though gentle *Zephyrus* propitious proves,  
And welcome Spring the rigid cold removes;  
Haste not too soon this tender Plant to expose.  
Your Gardens glory, the rash Primrose, shows  
Delay is better; since they oft are lost,  
By venturing too much into the frost.  
The cruel blasts which come from the North wind,  
To over-hasty flow'rs are still unkind.  
Let others ill create this good in you,  
Without deliberation nothing do.  
For this will scarce the open air endure,  
Till by sufficient warmth it is secure.

No Tree your Gardens, or your Fountains more  
Adorns, than what th' *Atlantic* Apples bore.  
A deathless beauty crowns its shining leaves,  
And to dark Groves its flower lustre gives.  
Besides the splendour of its golden fruit,  
Of which the boughs are never destitute;  
This gen'rous Shrub in Cases then dispose,  
Made of strong Oak, these little woods compose;  
Whose gilded fruits, and flow'rs which never fade,  
A grace to th' Countrey and your Garden add,  
Proud of the treasures Nature ha's bestow'd.  
When snowy flow'rs the slender branches load,  
And straying Nymphs to gather them prepare,  
Molest them not; but let your Wife be there;  
Your Children, all your Family employ,  
That so your house its orders may enjoy:  
That with sweet Garlands all may shade their brows;  
For in their flow'rs these Plants their vigor lose.

Suffer

Suffer the Nymphs to crop luxuriant trees,  
And with their fragrant wreaths themselves to please.  
Such soft delights they love; then let them still  
With their fresh-gather'd fruit their bosoms fill.  
These Apples *Atalanta* once betray'd:  
They, and not Love, o'recame the cruel Maid.  
These were the golden Balls which slack'd her pace,  
And made her lose the honour of the race.

But these sweet smells, and pleasant shades will cease,  
Nor longer be your Gardens happiness;  
Unless the hostile winter be repress'd,  
And those strong blasts sent from the stormy East.  
Wherefore to hinder these from doing harm,  
You must your trees with walls defensive arm.  
To such warm seats they ever are inclin'd,  
Where they avoid the fury of the wind.  
These Plants besides that they this cold would shun,  
Look for th' *Assyrian*, and the *Median* Sun.  
In parched *Africa* they flourish more,  
Than if they grow by *Sirmons* icy shore.  
Lest then the frost, or barb'rous North should blast  
Your flow'rs, while all the Sky is over-cast  
With dusky clouds, sheds set apart prepare,  
To guard them from the winters piercing air;  
Till the kind Sun these tempests do's disperse,  
And with his influence cheers the Universe.  
Then calmer breezes shall o're storms prevail,  
And your fresh Groves shall sweet Perfumes exhale.

These trees are various, and the fruits they bear,  
Are different too. The Limons always are  
Of oval figure, underneath whose rind  
A juice ungrateful to our taste we find.  
But though at first our Palates it displease,  
Yet better with our stomach it agrees.  
Others less sharp do in *Hetruria* spring;  
Some, that are mild, from *Portugal* we bring.  
Another sort from old *Avantia* came,  
To which that City do's impart its name.  
Hard by *Dicean*, *Aracynthus* lies  
This ancient Town; the Orange hence does rise.  
To which in rind and juice the Limons yield,  
By each new soyl new tastes are oft instill'd.

Mind not the fables by the *Grecians* told  
Of the *Hesperian* Sisters, who of old  
On vast Mount *Atlas*, near the *Libyan* Sea,  
With greatest care did cultivate this Tree  
Of fierce *Alcides*, who by force brake in,  
And in the spoils of the *Nemean* skin;  
And from the Dragon, who securely slept,  
Stole, with success, the apples which he kept.  
Return'd to th' *Aventine*, he sets that hill,  
With Orange-trees, which *Italy* now fill.  
But things of greater moment are behind;  
For Purple *Oleander* may be joyn'd  
With Oranges, and Myrdes; each of these  
Peculiar graces of their own possess.  
The Myrtle chiefly, which, if fame says true,  
From the God's bounty its beginning drew.

When *Venus* plac'd it in the pleasant shade  
Of the *Idean* Vales, about it plaid  
Whole troupes of wanton *Cupids*, while the night  
Was clear, and *Cynthia* did display her light.  
This *Cithonia* above all prefers,  
And by transcendent favour made it hers.  
With Myrtle, hence, the wedded pair delights  
To crown their brows at *Hymeneal* Rites.

Hence *Juno*, who at Marriages presides,  
For Nuptial Torches always these provides.  
*Eriphyle*, sad *Procris*, *Phædra* too,  
And all those fools, who in *Elysiun* woo;  
Honour this Plant, and under Myrtle Groves,  
If after death they last, recount their loves.

Proud Victors with its boughs themselves adorn,  
While round their temples wreaths with it are worn.  
*Tudertus*, when the vanquish'd *Sabines* fled,  
Plac'd one of these on his triumphant head.  
The trunk is humble, and the top, as low,  
On which soft leaves and curled branches grow.  
Its grateful smell, and beauty so exact,  
Th' admiring Nymphs from ev'ry part attract.  
If too much heat, or sudden cold surprize,  
Which are alike the Myrdes enemies,  
You must avoid them both, and quickly place  
The tender Plant within a wooden Case.  
Sheds may protect them, if the cold be great;  
Or warring from the Summers scorching heat,  
No impious tool our tenderness allows,  
To sell these groves, nor camel here must browse.

Oft *Oleanders* in great *Vale's* live,  
With Myrdes mix'd, and Oranges, and give  
Some graces to your Garden, which arise  
From the confusion of their different dies.

In watry Vales, where pleasant Fountains flow,  
Their fragrant berries lovely Bay-trees show.  
With leaves for ever green, nor can we guess  
By their endowments their extraction less.  
The charming Nymph liv'd by clear *Peneus* side;  
And might to *Jove* himself have been ally'd,  
But that she chose in virtues path to tread,  
And thought a God unworthy of her bed.  
*Phæbus*, whose darts of late successful prov'd  
In *Pythons* death, expected to be lov'd.  
And had she not withstood blind *Cupids* pow'r,  
The fiery steeds and heav'n had been her dow'r.  
But she by her refusal more obtain'd,  
And losing him, immortal honour gain'd,  
Cherish'd by thee *Apollo*. Temples wear  
The Bays, and ev'ry clam'rous Theater.  
The *Capitol* it self; and the proud gate  
Of great *Tarpeian* *Jove* they celebrate.  
Into the *Delphick* Rites, the Stars they dive;  
And all the hidden laws of Fate perceive.  
They in the field (where death, and danger's found;  
Where clashing Arms, and louder Trumpets sound)  
Incite true courage: hence the Bays, each *Musi*,  
Th' inspiring God, and all good Poets chuse.

*Persian Ligustrum* grows among the rest,  
Whose azure flowers imitate the Crest  
Of an *Exotick* Fowl; they first appear  
When the warm Sun, and kinder Spring draws near.  
Then the green leaves upon the boughs depend,  
And sweet Perfumes into the air ascend.

*Pomegranates* next their glory vindicate;  
Their boughs in gardens pleasing charms create.  
Nothing their flaming Purple can exceed,  
From the green leaf the golden flow'rs proceed:  
Whose splendor, and the various curls they yield,  
Add more than usual beauty to the field.  
As soon as e're the flowers fade away,  
Yet to preserve their lustre from decay,

To them the fruit succeeds, which in a round  
Conforms it self, whose top is ever crown'd  
In seats apart, stain'd with the *Tyrian* dye,  
A thousand seeds within in order lye.  
Thus, when industrious Bees do undertake  
To raise a waxen Empire, first they make  
Rooms for their honey in divided rows;  
And last of all, on twigs the Combs dispose.  
So ev'ry seed a narrow cell contains,  
Made of hard skin, which all the frame sustains.  
Neither to sharp or sweet the seeds incline  
Too much, but in one mixture both conjoin.

From whence this Crown, this Tincture is deriv'd,  
We now relate; the Nymph in *Africk* liv'd:  
Descended from the old *Numidians* Race,  
Beauty enough adorn'd her swarthy face;  
As much as that tann'd Nation can admit,  
Too much, unless her stars had equall'd it.  
Mov'd by ambition she desir'd to know  
What e're the Priests or Oracles could show  
Of things to come, a Kingdom they dispense  
In words including an ambiguous sense.  
She thought a crowa no less had signifi'd,  
But in the Priests she did in vain confide.  
When *Bacchus* th' Author of the fruitful Vine  
From *India* came, her for his Concubine  
He takes; and to repair her honour lost,  
Presents her with a Crown; by fate thus crost,  
The too ambitious Virgin ceas'd to be;  
Transmitting her own beauty to this Tree.

Sharp *Palmarus*, *Rhamnus*, (which by some  
Is White-thorn term'd) your Garden will become.  
There leavy *Caprifoli*, *Alcea* too,  
Th' *Idean* Bush, and *Halimus* may grow.  
Woody *Acanthus*, *Ruscus* there may spring,  
With other Shrubs, these skilful Gard'ners bring  
Into a thousand forms; but 'tis not fit  
To tell their *Species* almost infinite.

From brighter woods the prospect may descend  
Into your Garden, there it self extend  
In spacious walks, divided equally,  
Where the same angles in all parts agree.  
In oblique windings others plant their Groves,  
For ev'ry man a different figure loves.  
Thus the same paths, respecting still their bound  
In various tracts diffuse themselves around.  
Whether your walks are straight, or crooked made,  
Let gravel, or green turf be on them laid.  
The Nymphs and Matrons then in woods may meet,  
There walk, and to refresh their weary'd feet,  
Into their Chariots mount, though to the young  
Labour and exercise does more belong.

If close-thorn *Phylliræa* you deduce  
Into a hedge, for knots the *Carpine* use;  
Or into Arbors with a hollow bark,  
The pliant twigs of soft *Acanthus* make.  
With stronger wires the flowing branches bind,  
For if the boughs by nothing are confin'd,  
The Tonsile Hedge no longer will excel;  
But uncontroll'd beyond its limits swell.

And since the lawless Grass will oft invade  
The neighb'ring walks, repress th' aspiring blade.  
Suffer no grass, or rugged dirt t' impair  
Your smooother paths; but to the Gard'ners care  
These things we leave; they are his business,  
With setting flow'rs, and planting fruitful trees.  
And with the master let the servants joyn,  
With him their willing hearts and hands combine:  
Some should with rowlers tame the yielding ground,  
Making it plain, where' ruder clods abound.  
Some may fit moisture to your Meadows give,  
And to the Plants and Garden may derive  
Refreshing streams; let others sweep away  
The fallen leaves; mend hedges that decay;  
Cut off superfluous boughs; or with a Spade  
Find where the Moles their winding nests have made;  
Then close them up: Another flow'rs may sow  
In beds prepar'd; on all some task bestow:  
That if the Master happens to come down,  
To fly the smook and clamour of the Town;  
He in his *Villa* none may idle find,  
But secret joys may please his wearied mind.

And blest is he, who tir'd with his affairs,  
Far from all noise, all vain applause, prepares  
To go, and underneath some silent shade,  
Which neither cares nor anxious thoughts invade,  
Do's, for a while, himself alone possess;  
Changing the Town for Rural happiness.  
He, when the Suns hot steeds to th' Ocean haff,  
E're fable night the world has over-cast,  
May from the hills the fields below descry,  
At once diverting both his mind and eye.  
Or if he please, into the woods may stray,  
Listen to th' Birds, which sing at break of day:  
Or, when the Cattle come from pasture, hear  
The bellowing Oxe, the hollow Valleys tear  
With his hoarse voice: Sometimes his flow'rs invite;  
The Fountains too are worthy of his sight.  
To ev'ry part he may his care extend,  
And these delights all others so transcend,  
That we the City now no more respect,  
Or the vain honours of the Court affect.  
But to cool Streams, to aged Groves retire,  
And th' unmix'd pleasures of the fields desire.  
Making our beds upon the grassie bank,  
For which no art, but nature we must thank.  
No Marble Pillars, no proud Pavements there,  
No Galleries, or fretted Roofs appear,  
The modest rooms to *India* nothing owe;  
Nor Gold, nor Ivory, nor Arras know:  
Thus liv'd our Ancestors, when *Saturn* reign'd,  
While the first Oracles in Okes remain'd.  
A harmless course of life they did pursue;  
And nought beyond their hills, their Rivers knew.  
*Rome* had not yet the Universe ingross'd,  
Her Seven Hills few Triumphs then could boast.  
Small herds then graz'd in the *Laurentine* Mead;  
Nor many more th' *African* Valleys feed.

Of Rural Ornaments, of Woods much more  
I could relate, than what I have before;  
But what's unfinish'd my next care requires,  
And my tir'd Bark the neighb'ring Port desires.

*Resonate montes Laudationem, SYLVA, Et omne Lignum ejus. Isa. 44. 23.*





A  
Philosophical Discourse  
O F  
E A R T H

Relating to the  
*Culture and Improvement of it for Vegetation,  
and the Propagation of Plants, &c. as it  
was presented to the Royal Society, April  
29. 1675.*

---

By *J. Evelyn Esq; Fellow of the said SOCIETY.*

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Πολλάκι τοι κηπουρός ἀνὴρ κατὰκαίρον εἶπε.

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*The Second Edition Improv'd.*

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L O N D O N,  
Printed for *John Martyn*, Printer to the *Royal Society.*  
MDC LXXVIII.

Philosophical Dictionary

# A R T I C L E

of the nature of the human mind, and of the principles of its operation, as they relate to the various faculties and powers of the soul, and to the different degrees of its activity and energy.

By the Author of the 'Philosophical Dictionary.'

London: Printed by J. B. Nichols, in Pall-mall.

MDCCLXXV.



Printed by J. B. Nichols, in Pall-mall.



TO THE  
RIGHT HONOURABLE

My LORD Viscount

B R O U N C K E R, &c.

President of the

ROYAL SOCIETY, &c.

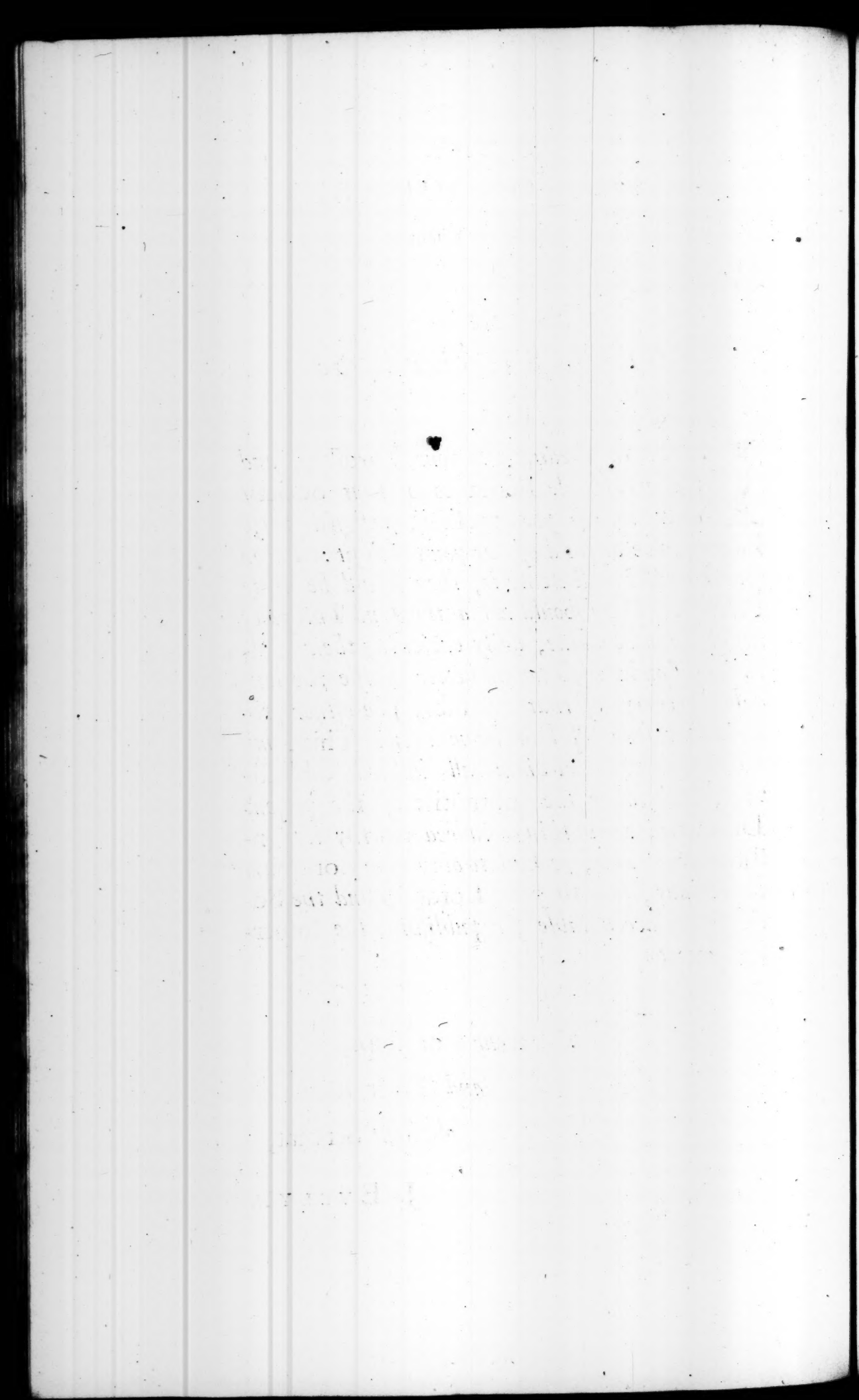
My Lord,

**I** Have in obedience to your Lordship, and the irresistable Suffrages of that Society over which you preside, resign'd these Papers to be dispos'd of, as you think fit: I bear your Lordships sentence is, they should be made Publick. Why should not a thousand Things of infinitely more value, daily enriching their Collection (and which would better justifie the laudable progress of that Assembly) be oftner produc'd, as some of late have been? This, my Lord, would obviate all unkind Objections, and cover the Infirmities of the present Discourse, with things indeed worthy its Institution. But, as I am to obey your Lordships Commands, so both your Lordship and the Society are accountable for publishing the Imperfections of

My Lord,

Your Lordships,  
and Their most  
obedient Servant,

J. EVELYN.



A  
Philosophical Discourse  
O F  
E A R T H.

**I** AM call'd upon, by Command from your *Lordship*, and the Council, who direct the progress of the *Royal Society* (and as in course it falls) to entertain this *Illustrious Assembly* with something, which being either deduced from, or leading to *Philosophical Experiment*, may be of real use, and suitable to the design of its Institution.

I am highly sensible, as of the honour which is done me, so of the great disadvantages I lye under, for want of abilities to carry me through an undertaking of this importance, and before such acute and learned Judges; but I hope, my obedience to your Commands, and, at least, endeavours, will cover those defects for which I can make no other Apology.

There are few here, I presume, who know not upon how innocent and humble a subject I have long since diverted my thoughts; and therefore, I hope, they will not be displeased, or think it unworthy of their patience, if from their more sublime and noble speculations (and which do often carry them to converse among the brighter Orbs, and Heavenly Bodies) they descend a while, and fix their eyes upon the *Earth*, which I make the present Argument of my Discourse. I had once indeed pitch'd upon a Subject of somewhat a more brisk and lively nature; for what is there in Nature so sluggish and dull as Earth? What more spiritual and active than *Vegetation*, and what the Earth produces? But *this*, as a Province becoming a more steady hand, and penetrating wit, than mine to cultivate (unless where it transitorily comes in my way to speak of *Salts* and *Ferments*) I leave to those of this learned *Society*, who have already given such admirable Essays of what they will be more able to accomplish upon that useful and curious Theme; and therefore I beg leave, that I may confine my self to my more proper *Element*, the *Earth*, which though the lowest, and most inferiour of them all, is yet so subservient, and necessary to *Vegetation*, as without it there could hardly be any such things in Nature.

To begin, I shall in the first place then describe, what I mean by *Earth*; then I shall endeavour to shew you the *several sorts* and kinds of Earth; and lastly, how we may best *improve* it to the Uses of the *Husbandman*, the *Forester*, and the *Gardner*, which is indeed



deed of large and profitable extent, though it be but poor and mean in sound, compar'd to Mines of Gold and Silver, and other rich *Ores*, which likewise are the Treasures of the Earth, but less innocent and useful.

I intend not here to amuse this noble Audience, or my self, with those nice enquiries, concerning what the real *Form* of that Body, or Substance is, which we call *Earth*, denudated and stripp'd of all *Heterogeneity*, and reduc'd to its principles, as whether it be composed of *sandy, central, nitrous*, or other *Salts*, Atoms, and Particles? Whether void of all qualities but dryness, and the like (as they commonly enter into the several definitions of *Philosophers*,) nor of what Figure and Contexture it consists, which causes it to adhere and combine together, so as to affirm any thing dogmatically thereupon; much less shall I contend, whether it be a *Planet* moving about the *Sun*, or be fixt in the *Center* of the Universe; all which have been the curious researches and velitations of our later *Theorists*: but content my self with that Body or Mass of Gleab, which we both dwell on, and every day cultivate for our necessary subsistence, as it affords us *Corn, Trees, Plants*, and other *Vegetables* of all sorts, useful for humane life, or the innocent refreshments of it.

Kircher. in  
mund. subter.

Those who have written *de Arte Combinatoria*, reckon of no fewer than *One hundred seventy nine millions one thousand and sixty different sorts of Earths*; but of all this enormous number, as of all other good things, it seems they do not acquaint us with above eight or nine eminently useful to our purpose; and truly, I can hardly yet arrive at so many. Such as I find naturally and usually to rise from the Pit, I shall here spread before you in their order.

The most beneficial sort of *Mould* or *Earth*, appearing on the surface (for we shall not at present penetrate lower than is necessary for the planting and propagation of *Vegetables*) as it consists of a mixt body, is the *natural* (as I beg leave to call it) *underturf-Earth*, and the rest which commonly succeeds it, in *strata's*, or layers, 'till we arrive to the barren, and impenetrable *Rock*, be it fat or lean, *Loam, Clay, Plastic, Figuline*, or *Smeſtic*; as *Chalk, Marble, Fullers-Earth, Sandy, Gravelly, Stony, Rock, Shelly, Coal, or Mineral*; such as with the Ancients were the *Creta, Argilla, Smeſtica, Tophacea, Pulla, Alba, Rufa, Columbina, Marcra, Cariosa, Rubrica* (I name them promiscuously) to be found in the old *Geoponic* Authors, to whom I refer the Critical.

Most, or all, of these lying (as I affirm'd) in Beds, one upon another, from softer to harder, better to worse, usually determine in *Sand, Gravel, Stone, Rock, or Shell*, which last we frequently meet with in Marls, and Fenny Delves, and sometimes even at the foot of high Mountains, after divers successions of different Moulds.

I begin with what commonly first presents it self under the removed Turf, and which, for having never been violated by the Spade, or received any foreign mixture, we will call the *Virgin-Earth*;

*Earth*; not that of the *Chymists*, and the Searchers after the *Philosophers Stone*; but as we find it lying about a foot deep, more or less, in our Fields, before you come to any manifest alteration of colour or perfection. This surface-Mold is the best, and sweetest, being enriched with all that the Air, Dews, Showers, and Celestial Influences can contribute to it: For 'tis with good *Earth*, as with excellent *Water*, that's the best, which with least difficulty receives all external qualities; for the fatness of this *Under-turf* Mold, being drawn up by the kindly warmth of the Sun to the superficies, spends but little of its vigour in the Grass and tender verdure which it produces, and easily nourishes without dissipating its virtue, provided no rank Weeds, or predatitious Plants (consummating their Seeds) be suffered to grow and exhaust it; but maintains its natural force, and is therefore of all other uncultivated Molds the most grateful to the Husbandman.

Now as the rest of incumbent, and subjacent *Earths* approach this in virtue, so are they to be valued; and of these there are several kinds, distinguishable by their several constitutions: The best of which is *black*, *fat*, yet porous, light, and sufficiently tenacious, without any mixture of *Sand* or *Gravel*, rising in pretty gross Clods at the first breaking up of the Plow; but with little labour and exposure falling to pieces, but not crumbling altogether into Dust, which is the defect of a more vicious sort. Of this excellent *black* Mold (fit almost for any thing without much manure) there are three kinds, which differ in hue and goodness.

The next layer in *series* to this, is usually mixt with a sprinkling of Stones, somewhat hard, yet friable, and when well aired and stirred, is not to be rejected; the looseness of it, admitting the refreshment of Showers, renders it not improper for Trees, and Plants which require more than ordinary Moisture. Declining from this in perfection, is the *darkish-Gray*, or *Tawny*, which, the deeper you mine, rises vein'd with yellow, and sometimes reddish, till it end in pale; and if you penetrate yet farther, commonly in Sand, and a gritty stone.

Of a second *class*, is Mold of an obscure Colour also, more delicate grain, tender, chequum and mellow; clear of Stones and grittiness, with an eye of *Loam* and *Sand*, which renders it light enough, yet moist; of all other the most desirable for *Flowers*, and the *Coronary Garden*.

To this we add, a yet more obscure, and sandy Mold, accompanied with a natural fatness, and this, though rarer, is incomparable for almost any sort of *Fruit-Trees*.

A *third* participates of both the former, fattish, yet interspersed with small Flints and Pebbles, not to be altogether neglected.

A *fourth* is totally *sandy*, and that of divers colours, with sometimes a bottom of *Gravel*, now and then *Rock*, and not seldom *Clay*; and, as the foundations are, so is it more or less retentive of moisture, and tolerable for Culture: But all *Sand* does easily

admit of Heat and Moisture, and yet for that not much the better; for either it dismisses, and lets them pass too soon, and so contracts no ligature; or retains it too long; especially where the bottom is of Clay, by which it parches, or chills, producing nothing but Moss, and disposes to *Cancerous* infirmities: But if, as sometimes it fortunes, that the Sand have a surface of more genial mold, and a fund of Gravel or loose stone; though it do not long maintain the virtue it receives from Heaven; yet it produces as forward springing, and is parent of sweet Grass, which, though soon burnt up in dry weather, does as soon recover, with the first rain that falls.

Of pure and *sheere-Sand*, there's white, black, bluish, red, yellow, harsher, and milder, and some meer dust in appearance, none of them to be desired alone; but the grey-black, and ash-colour'd, and that which frequently is found in heathy Commons, or of the travelling kind, volatile, and exceeding light, is the most insipid, and worst of all. I do not here speak of the drift and Sea Sands, which is of admirable virtue, and use in mixtures, and to be spread on some lands, because it has been describ'd so accurately already in a just discourse, upon another occasion, by an experienced *Gentleman*, dwelling in the Western parts, where this Manure is perfectly understood, and recommended to more general use.

As of *Sands*, so are there as different sorts of *Clays*, and of as different colours, whereof there is a kind so obstinate and ill-natured, as almost nothing will subdue it, and another so voracious and greedy, as nothing will satiate, without exceeding industry, because it ungratefully devours all that is applyed to it, turning it into as arrant *Clay* as it self: Some *Clays* are more pinguid than other; some more slippery; all of them tenacious of Water on the surface, where it stagnates and chills the plant, without penetrating, and in dry seasons costive, and hardening with the Sun and Wind, most of them pernicious, and untractable.

The unctuous, and fatter *clay* frequently lies upon the other, having oftentimes a basis of *Chalk* beneath it; but neither is this worth any thing, till it be loosened, and rendred more kind, so as to admit of the air and heavenly influences; In a word, the *blue*, *white*, and *red-clay* (if strong) are all unkind, the stony, and looser sort is yet sometimes tolerable; but the light *Brick-earth* does very well with most *Fruit-trees*.

I had almost forgotten *Marsh-earths*, which though of all other, seemingly, the most churlish, a little after 'tis first dug, and dryed (when it soon grows hard, and chaps,) may with labour, and convenient exposure, be brought to an excellent temper; for being the product of rich Slime, and the sediment of Land-Waters, and Inundations, which are usually fat, as also the rotting of Sedge, yea, and frequently of prostrated Trees, formerly growing in, or near them, and in process of time rotted (at least the spray of them) and now converted into mold, becomes very profitable Land: But whether I may reckon this among the natural *Earths*, I do not contend.

Of *Loams*, and *Brick-Earths*, we have several sorts, and some approaching



approaching to *Clay*; others nearer *Marle*, differing also in colour; and if it be not too rude, mingled, in just proportion, with other Mold, an excellent ingredient in all sorts of *Earth*, and so welcome to the Husbandman, and the Gardener especially; as nothing does well without a little dash of it.

Of *Marle* (of a cold, sad nature) seldom have we such quantities in Layers, as we have of the forementioned *Earths*; but we commonly meet with it in places affected to it, and 'tis taken out of Pits, at several depths, and of divers colours, red, white, gray, blue, all of them unctuous, of a slippery nature, and in goodness, as being pure and immixt, it sooner relents after a shower, and when dried again, slackens, and crumbles into dust, without induration, and growing hard again.

Lastly, *Chalk*, which is likewise of several kinds and colours; hard, softer, fine, coarser, slippery and marly, and apt to dissolve with the weather into no unprofitable Manure: Some of them have a Sandish, others a blacker and light surface; and there is a sort which produces sweet Grass, and Aromatick Plants, and some so rank, especially in the Vallies of very high Hills, as to feed not only Sheep, but other Cattel, to great advantage, as we may see in divers places among the *Downs* of *Sussex*. But it has a peculiar virtue above all this, to improve other Lands, as we shall come to shew.

I forbear to speak particularly of *Fullers Earth*, *Tobacco-Clay*, and the several fictile *Clays*; because they are not so universal, and serviceable to the Plow and Spade; much less of *Terra Lemnia*, *Chia*, *Melita*, *Hetruria* and the rest of the *Sigillate*; nor of the *Bolus*, *Rubrics*, and *Okers*, *Figuline*, *Stiptic*, *Smegmatic*, &c. as they are diversly qualified for several uses, *Medical*, and *Mechanical*; but content my self with those I have already enumerated.

Now besides the Description and Characters we have given of these several *Molds* and *Earths*, as they reside in their several Beds and Couches, there are divers other Indications, by which we may discover their *qualities* and *perfections*; as amongst other, a most infallible one is, its disposition to melt, and crumble into fine morsels, not turn to Mud and Mortar, upon the descent of gentle showers, how hard soever it seem before, and if in stirring it rise rather in *granules*, than massy Clods.

If excavating a Pit, the Mould, you exhaust, more than fill it again, *Virgil* tells us 'tis good Augury; upon which *Laurembergius* affirms, that at *Witteberg* in *Germany*, where the Mould lies so close, as it does not replenish the foss, out of which it has been dug, the *Corn* which is sown in that Country, soon degenerates into *Rye*; and what is still more remarkable, that the *Rye* sown in *Thuringia* (where the *Earth* is less compacted) reverts, after three Crops, to be Wheat again.

My Lord *Bacon* directs to the observation of the *Rain-bow*, where its extremity seems to rest, as pointing to a more roscid and fertile Mold; but this, I conceive, may be very fallacious, it ha-

ving two horns, or bates, which are ever opposite.

But the situation, and declivity of the place is commonly a more certain mark; as what lies under a Southern, or South-East rising-ground; But this is also eligible according to the purposes you would employ it for; some *Plants* affecting hotter, other colder exposures; some delight to dwell on the Hills, others in the Vallies, and closer Seats; and some again are indifferent to either; but generally speaking, most of them chuse the warm, and more benign; and the bottoms are universally fertile, being the recipients of what the showers bring down to them from the Hills and more elevated parts.

Another infallible indication is the nature, and floridness of the *Plants* which officiously it produces; as where *Thistles* spontaneously thrive; where the *Oak* grows tall and spreading; and as the Plant is of kind, so to prognostic for what Tillage, Layer, or other use, the ground is proper; *Tyme*, *Straw-berries*, *Betony*, &c. direct to Wood; *Camomile*, to a Mould disposed for *Corn*, and I add, to Hortulan furniture; *Burnet*, to Pasture; *Mallows* to Roots, and the like, as my Lord *Verulam* and others observe.

On the contrary, some ground there is so cold, as naturally brings forth nothing but *Gorse*, and *Broom*, *Holly*, *Tew*, *Juniper*, *Ivy*, *Ros*, &c. which may happily direct us to the planting of *Pine*, *Firs*, the *Phyllireas*, *Spanish Broom*, and other perennial verdures in such places.

*Moss*, *Rushes*, *Wild-Tansy*, *Sedge*, *Flags*, *Ferne*, *Tarrow*, and where *Plants* appear wither'd or blasted, shrubby, and curl'd, (which are the effects of immoderate wet, heat, and cold interchangeably) are natural auguries of a cursed Soil: yet I have observ'd some *Ferny-Grounds* proper enough for *Copp'ce*, and *Forest-trees*. Thus, as by the *Plants* we may conjecture of the Mould; so by the Mould may we guess at the Plant: The more herbaceous and tender, springing from the gentle Bed; the coarse and rougher *Plants*, from the rude and churlish: And as some *Earths* appear to be totally barren, and some though not altogether so unfruitful, yet wanting salacity to conceive, vigour to produce, and sensibly excluding all our pains; so there is other, which is perpetually pregnant, and this is likewise a good prognostic.

Upon these, and such like hints, in proposals of transplanting *Spices*, and other exotic rarities, from either *Indies*; the curious should be studious to procure of the natural-Mould in which they grow (and this might be effected to good proportion, by the ballasting of Ships) either to plant, or nourish them in from the *Seed*, till they were of age, and had gained some stability of roots and stem, and become acquainted with the *Genius* of our *Climate*; or for *Essays* of Mixtures, to compose the like.

By the goodness, richness, hungeriness and tincture of the *Water* straining through grounds, and by the weight, and sluggishness of it, compared with the lighter, conjecture also may be made, as in part we have shewed already.

To conclude, there are almost none of our *senses*, but may of

of right pretend to give their verdict here, and first,

By the *Odour* or *Smell*, containing (as my Lord *Kerulam* affirms) the juice of *Vegetables* already as it were concocted and prepared; so as after long drowths, upon the first rains, good, and natural Mould will emit a most agreeable scent; and in some places (as *Alonso Barba*, a considerable *Spanish* Author testifies) approaching the most ravishing perfumes; as on the contrary, if the ground be disposed to any *Mineral*, or other ill quality, sending forth *Arsenical*, and very noxious steams; as we find from our Marshes and Fenny grounds.

By the *Taste*, and that with good reason; all *Earths* abound- ing more or less in their peculiar *Salts*, as well as *Plants*; some sweet and more grateful; others bitter, mordacious, or astringent; some flat and insipid; all of them to be detected by *percolation* of untainted Water through them; though there be who affirm, that the best *Earth*, like the best *Water*, and *Oyl*, has neither Odour, nor Taste.

By the *Touch*, if it be *tenera*, fatty, deterfive, and slippery; or more asperous, gritty, porous and fryable; likewise, if it stick to the fingers like Bird-lime, or melt, and dissolve on the tongue like Butter: Furthermore, good and excellent *Earth* should be of the same constitution, and not of contrary, as soft and hard; churlish and mild; moist and dry; not too unctuous, nor too lean, but resolu- ble, and of a just and procreative temper, combining into a light, and easily crumbling Mould; yet consistent, and apt to be wrought and kneaded, such as having a *modicum* of *Loam* naturally rising with it, to entertain the moisture, does neither defile the Fingers, nor cleave much to the Spade, which easily enters it, and such as is usually found under the turf of Pasture-grounds, upon which Cattel have been long fed and foddered. In a word, *that* is the best *Earth* to all Senses, which is blackish, cuts like Butter, sticks not obstinately, but is short, light, breaking into small Clods; is sweet, will be temper'd without crusting or chapping in dry wea- ther, or (as we say) becoming Mortar in wet.

Lastly, by the *Sight*, from all the Instances of *Colour*, and or- ther visible Indications: For the common opinion is (though long since exploded by *Columella*) that all hot, and choleric grounds, are red or brown; cold and dry, blackish; cold and moist, whitish; hot and moist, ruddy; which yet, exhalations from *Minerals*, the heat of the Sun, and other accidents may cause; but generally, they give preeminence to the darker *Grays*; next, to the Ruffet; the clear Tawny is found worse; the light and dark-ash-colour (light also of weight, and resembling Ashes) good for nothing; but the yellowish-red worst of all. And all these are fit to be known, as contributing to noble and useful *Experiments*, upon due and accurate Comparisons, and enquiries from the several Particles of their Constitutions, Figures, and Modes, as far at least, as we can discover them by the best auxiliaries of *Microscopes*, *Lotions*, *Strainers*, *Calcinations*, *Triturations* and grindings; upon such discovery to judge of their qualities, and by essaying variety of mixtures,



mixtures, and imitating all sorts of *Mold*, *foreign* or *Indigen*, to compound *Earths* as near as may be resembling the natural, for any special or curious use, and be thereby enabled to alter the genius of Grounds as we see occasion.

The consideration of this it was, which gave me the curiosity to fall upon the examining of a Collection I had made of several sorts both of *Earth* and *Soils*, such as I could find about this Territory; whereof some I washed, to find by what would melt, reside, or pass away in the percolation; of what visible Figure they chiefly seemed to consist, armed as I was with an indifferent *Microscope*, of which be pleased to take this brief account.

*Gravelly* and *Arenous* *Earths* of several sorts, before they were washed, appeared to be, most of it, rough *Crystals*, of which some very transparent and gemmy; few of them sharp or angular, but roundish; mixed with Atoms and Particles of a mineral hue, which being well dried, and bruised on a hard serpentine Stone, and *Mullar* of the same, was with little labour, reduced to an impalpable whitish Sand, untransparent, as it happens in the bruising of most, though never so diaphanous bodies, which may be so reduced.

*Yellow Sand* had the appearance of Amber; bruised, an untransparent paler Sand.

*Fat rich Earth*, full of black spots, without much discolouring the water (as hardly did any of the Sands at all) being dried, was reduced to a delicate sandy Dust, with very little brightness.

*Marsh Earth* contained a considerable quantity of Sand, the rest resembled the Fat Earth.

The *Under-pasture mold* had likewise a sandy mixture, and what passed with the water after evaporation, seemed to be an impalpable, and very fine untransparent Sand.

*Clay* consisted of most exceeding smooth and round Sands, of several opacous colours.

*Potters-Earth*, of different sorts, ground small, became like Sand, of a yellowish grey, and other colours, exceeding polite and smooth.

A certain *yellowish loamy Earth*, which had been brought to me, with some *Orange-Trees* out of *Italy*, was reduced to a bright soft Sand, appearing more gemmy than in the other *Loams*.

*Chalk* resembled fine white Flower, and some of it sparkling, especially the harsher sort; but the tender, not.

*Fullers-Earth* appeared like *Gum tragacanth*, a little wetted, seemingly swelled, yet glistening; but when reduced to a fine dust, a smooth Sand.

*Tobacco-Earth*, not much bruised, was just like white Starch; washed, and well dried, it resembled the whitest Flower of *Wheat* a little candied: I had not the opportunity of examining the several sorts of *Marles*; and so I proceed to the *Dungs*.

*Neat's-Dung* (the Cattel fed only with Fodder, or little Grass, for 'twas in the Winter I made my observations) appeared to be nothing but straws in the entire substance, and colour little altered,

ed, save what a certain slippery mucilage gave them, sprinkled with a glistering Sand, like Atoms of *Gold*; but upon washing and drying again, the tenacious matter vanished, and the straws appeared separated and clear.

*Sheeps-Dung* was much like the former, only the spires and blades of a fine short grass conglomerated and rolled up in the Pellets, and the glew about it less viscous, but it passed also away in the lotion.

*Swines-Dung* had the resemblance of dirty Bees Wax, mingled with straws and husks, which seemed like candied *Eringo*, and some like *Angelica* Roots.

The Soil of *Horses* appeared like great wisps of Hay, and little straws, thin of mucilage, and which being washed, was easily to be discerned by a naked Eye.

*Deers-Dung* much resembled that of *sheeps*.

*Pigeons-Dung* consisted of a stiff glutinous matter, easily reducible to dust of a grey colour, with some husky Atoms, after dilution. Lastly,

The *Dung* of *Poultry*, was so full of Gravel, small stones, and sand, that there appeared little or no other substance, save a very small portion both of white and blackish viscous matter twisted up together; of all the other, the most foetid and ill smelling.

These were all I had time and leisure to examine, I cannot say with all the accurateness they were capable of, but sufficiently to encourage the more curious, and to satisfy my self, that the very finest Earth, and best of Moulds, however to appearance mixt with divers imperfect Bodies may, for ought we know, consist more of *sandy particles*, than of any other whatsoever; at least, if from this *Criterion* we may be allowed to pronounce, what they seem to the Eye, *Sands*, *Crystals*, or *Salts*, call them what you please; the consideration of which being so universally the cause of *Vegetation*, was no small inducement to me, to see, if by examining the several *Earths*, (though but by a cursory inspection) I might possibly detect, what Rudiments of such a *Principle* there were lurking in them, abstractedly taken; not that I opine *Earth* to be *Salt* alone, and nothing else (though perhaps little more besides *Sulphur*), for so it produces no Vegetable that I know of, without *Water* to dissolve and qualify it for insurrection, and perhaps some other matter fitted to receive the *seeds*, and keep the Plant steady; which yet for ought I can discern, is also but a finer sort of *sand*, the clamminess of it being rather something extrinsecal and accidental to it, than any thing natural, and originally constitutive: For, the combination of these several Molds, which gives the ligature, slipperiness, and a divers temper, seems rather to be caused by the perpetual and successive rotting of the *Grass*, *Plants*, *Leaves*, *Branches*, *Moss*, and other excrescences growing upon it (than any peculiar or solitary principle apart) which in long tract of time, has amassed together a substance *heterogeneous* to the ruder Particles, which after the dilutions of the superficies (that is of the rich, and fatter Mold) appears to be little other than *sand*,  
or

or fixed *Salts*, of various Figures and Colours; since even the most obdurate and flinty *Pebble* beaten, and ground to powder, or by Calcination reduced to an impalpable dust, is as fine both to the Eye, and smooth to the touch, as the most *Smectic* Earths and *Marles* themselves; such, at least, as you shall collect from the subsidence (to appearance) of the most Crystal Waters, precipitated by deliquated Oyl of *Tartar*, or the like; and the more they be subdued and broken, the harder they will prove, if (cleared of their *nitrons* parts) they pass the Potters Fire, however they seemed before to be of different constitution: This is evident in Vessels made of *Tabacco-Clay*, or whatever the material be, which has of late been so successfully employed, for the finding out of a composition (if so I may call it) nothing inferior to the hardest *Pourcelain*, and almost as beautiful (by a worthy Member of this Society.)

Mr. Hook.

But to return to our superficial Earth, which we call the *Mold*, I affirm it to grow, and increase yearly in depth from the Causes aforesaid; and in some places, to that proportion, as to have raised no inconsiderable Hills and Eminences, by the accidental fall and rotting of Woods and Trees; such as *Birch*, and *Beech*, &c. which are not of a constitution to remain long in the ground (as *Fir*, *Oak*, *Elm*, and some other Timber will do, and grow the harder) without corruption, and relenting into Mold as soft and tender, as what they first were sown or planted in; and of this I am able to give undenyable Instances. I insist not here on the perpetual successions, and generations of *Flints*, and other Stones, in the same places, where they have been sedulously gathered off, by many (not improbably) thought to proceed from *Worm-casts*, hardened by the air, and a certain *lapidescent succus* or spirit, which it meets with: And this, for happening most on *Downs*, very much exposed (yet undisturbed) is the more probable; as, on the other side, it establishes our conjecture of the purest Molds being capable of such a change; that which is thus cast up by the Worms, being so exceedingly elaborated and refined: Therefore let no man be over-confident, that because some *Earths* are soft, fat, and slippery, they may not possibly consist of *sands* (of which there are so many kinds,) since 'tis evident, that even all fossile Bodies, which can be reduced and brought to sands, may by contrition of the Particles be rendred so minute, as to emulate the finest *Earths* we have enumerated; the compactedness, and accidental mixtures resulting (as we affirm) from things extrinsecal, not excluding exhalations, passage of liquors and several juices to them, or conveyed by subterraneous steams and influences, be the Stones or *Rock Glancous*, *Metallic*, *Testaceous*, *Salts*, or any other *Concretes* whatsoever. And what, if we should indeed suspect all *Earth* to be arrant *Salt*, nay *Glass*, and that *Glass*, how hard soever, the off-spring and child of *water*, the most fluid, crystalline, sincere and void of all other qualities? 'tis not impossible, I think, but by the different texture of its parts, even that liquid *Element* may be brought to the consistence of a most different body to what

it



it appears: We know, that *Water* (besides that it was the first immense body which invested the *Chaos*) was by some thought to be the *Mother* of *Earth*, (nay the *principia soluta* of all mixts whatsoever,) and that the bottom of the Sea was made by a perpetual *Hypostasis* or subsidence, which precipitated from every part of it to the Center. I do not stand to justify these speculations, but to illustrate what I am about; namely, that *Water* is apt enough to be condensed and made hard; and crude *Mercury*, and running metal, *Crystals*, *Gems*, and *Pearls*, do more resemble it, than that dirty and opaque body, which we usually denominate *Earth*: Besides we find, how divers *Waters*, not only indurate, and petrify other substances, but grow into *Stones*, and leave a rocky *Callus* where they drop and continually pass, and that all sands and stones are not diaphanous; therefore that is no eviction, but that they might once have been fluid, since their opacity may be adventitious and proceed from sundry accidents; so as granting this *Hypothesis*, we are less to wonder, that this matter is above all other so disposed to *Vegetation*, and apt to produce *Plants* indued with Colour, Weight, Taste, Odour, and with sundry medical and other virtues, as I think that excellent Philosopher Mr. Boyle (the great ornament of this *Society*) does somewhere make out from the various *Percolations*, *Concoctions*, and *Circulations* of that fruitful *Menstrue*: And if that be true, that there is but one *Catholic*, homogeneous, fluid matter, (diversified only by *shape*, *size*, *motion*, *repulse*, and various *texture* of the minute Particles it consists of; and from which affections of matter, the divers qualities result of particular bodies;) what may not mixture, and an attent inspection into the anatomical parts of the vegetable family in time produce, for our composing of all sorts of Molds and Soils almost imaginable, which is the drift of my present Discourse? And why might not *Solomon* by this means have really had all kinds of *Plants* in his incomparable Gardens? even *Ebony*, *Cloves*, *Cinnamon*, and from the *Cedar* to the *Shrub*, such as grew only in the remotest regions, furnished (as he doubtless was) with so extraordinary an insight into all natural things, and powers, for the composing of Earths, and assigning them their proper mixtures and ferments. I do not here enquire, whether there be not a *Pansperme* universally diffused, individuated, and specified in their several *Matrixes*, and receptacles *pro ratione mixti* (as they speak) but I think there might very unexpected *Phenomenas* be brought to light, in vegetable productions, did men seriously apply themselves to make such possible tryals, as is in the power of Art to effect; and how far *Soils* may be dissembled, and the *Air*, and *Water* attempered, (at least for some curiosities, which may give light to more useful things) I do not conclude; but I should expect very rare, and considerable things from an attentive and diligent Endeavour. To this end, the raising of artificial *Dews* and *Mists*, impregnated with several qualities, for the more natural refreshment of Exotic Plants, were, it may be, no hard matter to effect, no more than were the modification of the *Air* abroad, as well as in our more confined

fin'd Reserves, where we set them in for *Hyemation*, and during the most rigorous Colds. As for mixtures of *Earths*; Plants we know, are nourished by things of like affinity with the constitution of the Soil which produces them; and therefore 'tis of singular importance, to be well read in the *Alphabet of Earths* and *Composts*: For, as we have said, Plants affect the *Marsh, Bog, Mountain, Vally, Sand, Gravel, fat and lean* Mold, according to their tempers; and for want of skill in this, the same Plant not only languishes and starves, but some we find to grow so luxuriate, as to change their very shapes, colours, leaves, roots, and other parts, and to grow almost out of knowledge of the skilfullest *Botanists*; not here to speak of what alterations do accrue from transplanting and irrigations alone. I mention this, to incite the curious to essay artificial Compositions, in defect of the natural Soil; to make new *confections* of *Earths* and *Molds* for the entertaining of the most generous and profitable Plants, as well as curious; especially, if as I hinted, we could skill to modify also the *Air* about them, and make the remedy as well *regional as topical*; and why not for other Fruits (Strangers yet amongst us) as for *Oranges, Lemons, Pomegranats, Figs*, and other precious Trees, which of late are become almost indenizon'd amongst us, and grow every generation more reconcileable to the Climate?

Here we might enlarge upon the several enquiries formerly suggested: As, how far *Principles* might be multiply'd, and differenced by alteration and condensation? Whether *Earth*, stript of all *heterogeneity*, and ununiform particles, retain only weight, and an insipid siccity? And whether it produce, or afford any thing more than *embracement* to the first rudiments of *Plants*, protection to the roots, and stability to the stem; unprolific, as they say, 'till married to something of a more masculine virtue which irradiates her womb; but otherways, nourishing only from what it attracts, without any *active* or *material* contribution: These indeed, with many other *queries*, do appositely come in here; but it would perhaps render this Discourse more prolix, than useful, to enter upon them in *detaill*; nor is it for me to undertake speculations of so abstruse a nature, without unpardonable ostentation; and therefore having only offered something towards the discovery of the great varieties, and choice of *Earths*, (such as we *Gardeners* and *Rustics* for the most part meet with in our Grounds,) my next endeavour shall be to shew, how we may improve the best, and prescribe remedy to the worst, by *labour* and stirring only, which being the least artificial, approach the nearest to Nature.

At the first breaking up of your Ground therefore, let there be a pretty deep Trench or Furrow made throughout, of competent depth (as the manner is of experienced *Gardeners*;) the Turf being first pared off, and laid by it self, with the first Mold lying under it, and that of the next in succession, that so they may both participate of the Air, Showers, and Influences, to which they are exposed; and this is to be done in severals, as deep as you think fit, that is, so far, as you find the *Earth* well natur'd; or you may fling

fling it up in several small mounds or lumps, suffering the Frosts and Snows of a Winter or two (according as the nature of it seems to require) pass upon them, beginning your work about the commencement of *Autumn*, before the Mold becomes too ponderous and sluggish; though some there are, who chuse an earlier season, and to open their Ground when the *Sun* approaches, not when he retires: But certainly, to have the whole *Winter* before us, does best temper, and prepare it for those impregnating agents.

In separating the surface-mold from the deeper, whether you make a Trench, or dig holes to plant your Trees in, be it for *Standards*, *Espaliers*, or *Shrubs*; the longer you expose it, and leave the receptacles open (were it for two whole *Winters*) it soon would recompense your expectation; and especially, if when you come to Plant, you dispose of the best, and fattest Earth at the bottom; which if it be of sweet, and ventilated *Mud of Ponds*, or *High-way-dust*, were preferable to all the artificial *Composts* you can devise: In defect of this, (where it cannot be had in quantity) cast in the upper *Turfs* (if not already consumed) the *Sod* downwards, with the next adhering Mold for half a foot in thickness; on this, a layer of well-matur'd *Dung*; then as much of the *Earth* which was last flung out, mixing them very well together: Repeat this process for *kinds*, *mixture*, and *thickness*, till your *trenches* and *holes* be filled four or five Inches above the level, or *area* of the Ground, to which it will quickly subside upon the first refreshings, and a very gentle treading to establish the Tree. *Fruit* planted in such Mold, you will find to prosper infinitely better, than where young Trees are clapt in at adventure, in new-broken-up Earth, which is always cold and sluggish, and ill complexion'd; nor will they require (as else they do) to be supplied every foot with fresh Soil, before they be able to put forth lusty and spreading roots; but which it is impossible to convey to them, so as to affect the underparts, by excavating the ground, and undermining the Trees (after once they arrive to any stature) without much trouble and inconvenience, and the manifest retarding of their progress.

If you will plant in *pits* and *holes*, and not give your ground an universal *Trenching* (which I prefer,) make them the larger, (*five foot* at the least square) but not above half a *yard* or two *foot* deep, according to the nature of the Tree. In dressing the *Roots*, be as sparing as possible of the *Fibers*, small and tender strings (which are as the *Emulgent Veins* which insame and convey the nourishment to the whole Tree;) and such of the *trunk*, and more confirmed parts which you trim, cut sloping, so as the wound may best apply to the Earth. The *Head*, or *Top* I advise you to let alone, till after the most penetrating colds be past, and then, about *February*, to take them off, and shape them as you please, and as the skilful *Gardeners* can direct you. Now the *Earth* in which you thus plant your *Fruit-trees*, will require *four annual stirrings*; namely, at the approach of *March*, a Spade-bit deep, covering it with some *Mungy* stuff, heaps of *Grass* or *Weeds* to protect it from the parching *Sun*: In *May* following, after a gentle rain, stir a



gain, but not deeper than to molest the subnascent *Weeds*. Thirdly, in the Month of *July*, and lastly *October*, after the same method you are taught in *March*.

This, for *standards* planted out for good and all: The *Nursery* requires a busier process, as 'tis excellently describ'd by Esq; *Cotston* in that late incomparable *Manual*, publish'd by that worthy Person. Briefly thus, three weeks before *Midsummer*, lay some green *Fern* about the Ranks, after the ground is labour'd, to defend it from the heats; in which work care must be had not to offend the tender Roots; therefore you shall stir it deeper in the middle of the lines or interstices, and when *Winter* comes, bury the *Ferns* in the place, by making little trenches, or rather taking away some of the Earth you shoulder'd up, when the stocks were first drawn out of the *Seminarie*, and planted in those rows; yet so, as to leave it somewhat higher than the *Area*, to secure them from the frosts. In *March* following stir your *Nursery* again, chopping, and mincing in the *Fern*, and mingling it with the loosen'd *Mold* which you took from the *Impes* when you first apply'd the *Ferns*: Then back them up again as before: Repeat this three or four years successively, 'till your Stocks are fit to Graff on. An *Orchard* thus planted, *Spring* and *Autumnal* stirrings of the *Mold* about them, is of incredible advantage; and even during the hottest Summer-Months carefully to abate the *Weeds* (but not to dig above a quarter of a *Spit*-deep, for fear of exposing them to the *Sun*, unless it be after plentiful showers) is very necessary.

There are, I confess, who fancy that this long exposure of *Earth* before it be employed for a Crop, causes it to exhale, and spend the virtue which it should retain; but, provided nothing be suffered to grow on it whilst it lies thus rough and fallow, there's no danger of that; there being in truth, no compost, or *latation* whatsoever comparable to this continual motion, *repastination*, and turning of the *Mold* with the Spade; the pared-off Turff (which is the very fat, and *efflorescence* of the *Earth*) and even *Weeds* with their vegetable *salts*, so collected into heaps, and exposed, being reduced, and falling into natural, sweet, and excellent *Mold*. I say, this is a marvellous advantage, and does in greater measure fertilize the ground alone, without any other additament: For the *Earth*, which was formerly dull and unactive, or perhaps producing but one kind of Plant, will by this culture dispose it self to bring forth variety, as it lies in depths, be it never so profound, cold and crude, the nature of the Plant always following the genius of the Soil; but indeed requiring time, according to the depth from whence you fetch it, to purge and prepare it self, and render it fit for conception, evaporating the malignant *Habitus* and impurities of the imprisoned air, laxing the parts, and giving easie deliverance to its off-spring.

I do not dispute, whether all Plants have their *primigenial seeds*, and that nothing emerges spontaneously, and at adventure; but, that these would rise freely, in all places, if impediments were removed (of which something has already been spoken;) and to shew,

shew, how pregnant most *Earths* would become, were these indispositions cured, and that those feminal rudiments, wherever latent, were free to move, and exert their virtue, by taking-off these Chains and Weights which fetter and depress them.

It is verily almost a miracle to see, how the same Land, without any other Manure or Culture, will bring forth; and even luxuriate; and that the bare raking and *combing* only of a bed of *Earth*, now one way, then another, as to the *regions* of Heaven, and *polar Aspects*, may diversifie the annual production, which is a *secret* worthy to be considered: I am only to caution our labourer as to the present work, that he do not stir the ground in over-wet, and slabby weather; that the *sulcus* or Trench, be made to run from *North* to *South*, and that, if there be occasion for opening of a fresh piece of *Earth*, for present use, he dig not above one *Spit*-deep, which will be sufficient to cover the roots of any plantable Fruit or other Tree; otherwise, not to disturb it again, till the *March* following; when, if he please, and that the ground seem to require an hastier maturation, there may be a Crop of *Beans*, *Pease*, or *Turneps* sown upon it, which will mellow it exceedingly, and destroy the noxious Weeds; after which, with a slight *repastination*, one may plant, or sow any thing in it freely; especially *Roots*, which will thrive bravely; and so will *Trees*, provided you plant them not too deep, but endeavour to make them spread, and take in the succulent virtue of the upper Mold; and therefore too deep trenching is not always profitable, unless it be for *Esulent Roots*, such as *Carrots*, *Parsneps*, *Beets*, and the like; since *Trees*, especially *Fruit*, would be tempted even by *baits*, to run shallow; such as penetrate deep, commonly spending more in Wood and Leaves, than in the burden for which we plant them.

There is only this caution due, that you never plant your *Roots* where the stiff, and churlish ground is likely to be within reach of them; for though it be neither necessary nor convenient, they should penetrate deep, it is yet of high importance, they should dilate and spread, which they will never do in obstinate and inhospitable land (but revert back towards the milder, and better natured Mold,) which crumples the roots, and perverts their posture to their exceeding damage. And to this infirmity our rare *Exotic Plants* and *Shrubs* are most obnoxious, confined as they are to their *Wooden Cases*, and *Testaceous Prisons*, and therefore require to be frequently trimm'd, and supplied with fresh, and succulent Mould to entertain the *Fibers*, which else you will find to *mat* in unexplicable intanglements, and adhere to the sides of the Vessel, where they dry or corrupt.

Having said thus much of the *Natural*, I should now come to *Artificial* helps, by application of *Dungs*, and *Composts*; and indeed. *stude ut magnum sterquilinum habeas*, was old, and good advice; but for that there be, who affirm any Culture of the *Earth* preferable to *Dung*, even things so slight as the haume of *Peas* and *Lupines*, or any other *Pulse* (for when I speak of *Dungs*,

Hesiod.

I mean those excrementitious and fordid materials which we commonly heap up and lay upon our Grounds,) I beg your patience to suspend a while my stirring that less pleasant mixture, and, 'till it be well air'd and fit for use, proceed a little farther on our former subject, and try what aid we may yet expect from more kind and benign means, before we come to the gross and violent. For, besides that such *compost* (at least so prepared as it ought to be) is not every where, nor always to be had in quantities; to confide in *Dungs* and *Ordure*, is not so safe, and of that importance to our Husbandman, as some are made believe; since if we shall look back into the best experience of elder days, we shall find, they had very little, or no use at all of *stercoration*. I know some there be, who attribute this neglect to the natural fertility of the Country, that 'tis the busie nurse of *Vermine*, and nauseous accidents; but waving these, (without intending to desert the aid of Soil in place and time,) I proceed with what I call more natural helps; namely, as we have shewed, by *opening*, *stirring*, and *ventilating* the *Earth*, and sometimes its contrary, by *coverture*, *shade*, *rest*, and forbearance for a season, as we daily see it practised in our worn-out and exhausted lay-fields, which enjoy their *Sabbaths*. 'Tis certain, that for our *Gardens* of Pleasure, the fairest beauties of the *Parterre*, require rather a fine, quick, friable, and well-wrought Mold, than a rank or richly dunged: and even all *Fruit-Trees* affect not to stand upon artificial and loose *Composts*, but in naturally rich, and sweet mold, within the scent and neighbour-hood of well-consum'd *soil* for the next *layer* under, and above; so as the virtue thereof may be derived to it through a *colature* of natural Earth; those forcing mixtures being more proper for *Annals*, and *Exotic* toys, which having but little time to live, refuse no assistances, whilst Trees of longer durance, care not much for accelerations.

Dr. Beale.

I shall here then begin with an *experiment* I have been taught by a learned Person of this illustrious Body, from whom I have long since received the choicest documents upon *this* and many curious subjects. And first, That amongst the mechanical aids, (wherein *stercoration* has no hand) that of pulverizing the *Earth* by confusion, and breaking it with Plow or Spade, is of admirable effect to dispose it for the reception of all the natural impregnations we have been discoursing upon, as constant and undenyable, I think will be evinced. For the *Earth*, especially if fresh, has a certain *magnetism* in it, by which it attracts the *Salt*, power, or virtue (call it either,) which gives it life, and is the *Logic* of all the labour and stir we keep about it, to sustain us; all *dungings* and other fordid temperings, being but the *vicars* succedaneous to this improvement, which of all other makes its return of Fruit, or whatsoever else it bears, without imparting any of those ill and pernicious qualities, which we sensibly discover from forced grounds; and that not only in the *Plants* which they produce, but in the very *Animals* which they feed and nourish.

I know, *Laurebergius* (somewhere) denies this, and that *Animals*



*mals* in preparing *Chyle*, transmute, alter, and insume what is only their proper aliment; rejecting all that is superfluous; but as our Early *Asparagus*, *Cauliflowers*, and divers roots, manifestly refuse it, so does the taste of the flesh, and milk of *Cattel*, and especially *Fowls*, that feed on the wild Garlick, Fenny-grass, and other rank and putrid things; not here to insist on their sweet, and delicate relish upon their change of Food, or more odoriferous pasture: But to the experiment.

Take of the most barren *Earth* you can find, drain'd, if you please, of all its *Nitrous Salts*, and masculine parts; reduce it to a fine powder (which may be done even in large proportion, by a rude Engine, letting fall a kind of hammer or beetle at the motion of a wheel;) let this pulveriz'd *Earth*, and for the time uncessantly agitated, be expos'd for a *Summer* and a *Winter* to the vicissitudes and changes of the seasons, and influences of Heaven: By this labour, and rest from Vegetation, you will find it will have obtain'd such a generous, and masculine pregnancy, within that period, as to make good your highest expectations: And to this belongs Sr. *Hugh Platts* Contrition, or Philosophical Grinding of *Earth*; which upon this exposure alone, without manure of Soile, after the like revolution of time, will, as he affirms, be able to receive an exotic Plant from the farthest *Indies*, and cause all Vegetables to prosper in the most exalted degree; and, to speak magnificently with that Industrious Man, to bear their fruit as kindly with us, as they do in their natural Climates. But a little to abate of this, modestly we may say, that this Culture (easy and simple as it is) will be found effectually able to render the Soil of a most extensive Capacity, for the entertainment of foreign, and uncommon plants. For to enumerate some of its perfections; such as refuse *Dung*, and violent applications, have here pure *Earth*; and such as require aid, a mellow and rich mold, impregnated with all the blessings which the Influences of the Heaven, and efflorescence of the *Earth* can contribute to it; fitted, as it is, for Generation, and yet so restrain'd from it, as greedily to receive the first *Seeds*, which are committed to it, with a passion, and fervency as it were of animal love. What high, and sublime things are spoken more upon this, I forbear to prosecute; but in Sir *Kenelm Digby's* discourse of *Sympathetic Powder*, he affirms, that the *Earth* in the years of repose recovers its Vigor, by the attraction of the Vital Spirits, which it receives from the air, and those superiour irradiations, which endow simple *Earth* with qualities promoting fermentation. And indeed, such a vegetative activity I have often observ'd in the bare exposure of some Plants but for a few hours only, as has rais'd my admiration, particularly, in the *Aloe*, and other kinds of *Sedums*, which, when to all appearance shrunk, and shrivel'd up, have fill'd themselves in a moment, set out in the *Air*, when a very few drops of water (at the same, that is, Winter, time) would certainly have made it rot, and turn to a mucilage, as, to my cost, I have experienc'd. And these Ferments of the *Earth*, by this amity, and genial intercourse with the

*Air*,

Air, are innumerable, to concoct, digest, accelerate, and restore; equal to, yea, beyond any artificial enforcements of *Dungs*, and *composts* whatsoever. But to return to dust again; by the toil we have mentioned, 'tis found, that Soil may be so strangely alter'd from its former nature, as to render the harsh, and most uncivil *Clay* obsequious to the Husbandman, and to bring forth *Roots*, and *Plants*, which otherwise require the lightest and hollowest molds.

In other cases and affections, the *Earth* may be likewise fertiliz'd as from without, so from within, by more recondite and *central* Causes, and agitations, which if in excess, may be allay'd with some *feminine* or other mixture; since oftentimes, qualities too intense, rather poyson dry and cholerick grounds, than conduce to their advantage, as we shall come to shew; and that which makes a cold and moist ground fertile, will destroy the contrary, as we see it in too free applications of *salt*; and therefore it requires no ordinary dexterity, to be able to direct where, and what remedies are to be administred; since we find it the same in *Vegetable* productions, as in the *Animal*, where Complexions should be suited; for want of which care, through avarice, and other sordid Circumstances, Noble Families themselves are many times rendr'd Childless, which might else have multipl'd and been perpetuated. To illustrate this by our present subject: We find, that a thin seifing, or sprinkling of *Ashes*, has enriched all the higher Pastures, when, where 'twas strew'd too thick, it became totally barren: Sometimes again, defect of sufficient depth may be cause of sterility; and so it frequently happens, that the proper remedy of some hungry, and shallow surface, is, to superinduce and lay more *Earth* upon it, and to find out the *medium* by diligent tryals of some degrees of depths in the same Soil; but solitary, single, or over-hasty Experiments, before the *Earth* be prepar'd by some of our foremention'd Essays, may prove discouraging, and unsufficient, as my Lord *Bacon* has oft advertis'd us.

*Earth* is also sometimes improv'd by mixtures of Fern, rotten leaves, and the pourriture of old Wood; the haulm of *Beans*, *Pease*, and other *legumina*, which heats, and accelerates Concoction; for which, and all other Medications, the nature of the Mold is carefully to be examin'd, that application be made accordingly; as for instance, If it be *sandy*, or other light mixed *Earth*, to imboddy it with something of a fatter nature, as *Lime*, or *Marle*, (for I yet forbear the touch of ordure or animal Composts, as the least natural;) and be sure so to stirr, and lay it (especially if with *Lime*) that it may not sink too deep, and suddainly, as 'tis apt to do, and so desert the surface-mold, where it should do the feat, and therefore it is to be the oftner renew'd. But *Marle* enters as properly here, and so does *Mudd*, *Slub* of slimy *Waters*; especially, if the soil be gravelly and mixt, which it will sadden and impinguate, and consequently combine; but if the *Gravel* be wet and cold, *Lime* is preferable: Wherefore, the nature of the mold should be well examin'd before the application; as here *arenous* and sandy *Earth* wants ligature, and besides consisting of sharp, and asperous

asperous angles, wounds and galls, curls, and dwarfs our Plants, without extraordinary help, to render the passages more slippery, and easy; and therefore relenting *Chalks*, or *Chalk-Marle*, is also profitable, with *Calcinations* of *Turfe*, or *Sea-Wrack*, where it is at hand; and if the Soil be exceeding bibulous, spread a Layer or Couch of *Loam*, discreetly mingl'd, at the bottom, to entertain the moisture. In the mean time, there are yet some *Plants* which thrive almost in nothing so well as in *Sand* alone, or with very little mixture, nor that of any *Dung*: So *Melons* are said to grow in *Jamaica*; and some vast *Timber-trees* have little, or no mold adhering to their roots; such is that beautiful stranger, the *Japan-Lilly*, call'd by those of *Garnsey* (from whence we only have them) *La belle de nuit*; and a certain *Palm* of the same *Japan*, which shrinks, and dries at the least touch of *Water*, as if it were laid before the *fire*, which is, it seems, the only remedy that restores it, or the suddain replanting it in *Scales* of *Iron*, or the most burning *Sand*: But what if *Sand* it self, however vulgarly reputed, be not so hot; or interiorly ardent, as 'tis given out to be? Indeed, for being of an open, and loose contexture, 'tis apt to put forth a forward *spring*, as more easily admitting the *solar* rays; but it does not continue, and is an infirmity which may be remedied with *Loam*, which not only unites it closer for the present, but is capable in time to alter and change its very nature also, so as too hot a *Compost* be no ingredient with it.

Here I take notice, that *Husbandmen* observe, a too clean and accurate gathering of *Stones* from off those Grounds, which lie almost cover'd with them, rather impoverishes than improves them; especially, where *Corn* is sown; by exposing it to Heat and Cold. Certain it is, that where they are not too gross, and plentiful, a moderate interspersion of the smaller *Gravel* preserves the *Earth* both warm, and loose, and from too suddain exhalation; whilst the over-fine grain, or too nice a sifting, makes it apt to congregate, and grow stiff upon wetting; so as the tender *Seedlings* can hardly issue through; and this is a *document* for ignorant *Gardeners*, who, when they have a fine *Flower*, think they can never make the ground fine enough about them; yet the finer the *Plant*, or *Seed*, the finer should the *Mold* be which entertains it; though when all is done, *Trees* thrive best, where they have easiest footing.

*Chalky* Grounds come next to be consider'd, and they should be treated like *Gravel*, *Sand*, and *Stony*, if harsh; but if of the melting kind, 'tis apt to mix with all the sorts of molds, and being of it self so husbanded, composes a kind of natural Soil fit for most uses, sought for and of admirable effect in dry Grounds.

Here now of Course something we are to speak concerning *Calcinations*, all reducing of *Stone* into *ashes* being of excellent use where *Lime* is upon any occasion proper; and indeed all our *Composts* and *Dungings* serve but to this end, namely, so to qualify, and mix the Soil, as may artificially answer to the varieties of the natu-



ral *Earth*, or such a Constitution of it, as the skilful Husbandman requires: As for Instance (since all fertility is the result of mixture contrary in quality) if it want due heat, to apply additions of a fiery nature; and therefore 'twere profitable, if in the using *Lime* with *Turfe*, and *Swarth*, it were laid alternatively, *Turfe* on *Lime*; and *Lime* on *Turfe*, in heaps for six months, by which means, it will become so mellow (and rich in *nitrous Salts*) as to dissolve, and run like *Asher*, and carry a much more cherishing Vigour, than if amassed in greater quantity; and so, by a too violent application, burn out, and exhaust the vegetative vertue which it should preserve. There is (by the way) this caution to be us'd in burning of *Earth*, that though what is *torrified* into blackness, will exceedingly fructifie; yet, if it proceed to adustion beyond that degree, it consumes the *Niter*, which is the principle would be preserved; as we shall come to shew, when we speak of *Salts*, which we are the most carefully to keep intire, in all our *animal* or other *Composts*: If once the *nitrous spirit* be quite mortifi'd, the *Earth* produces nothing, till being long expos'd, it have attracted a fresh supply to give it life and prepare it for conception: For otherwise, all moderate burnings, yea, and even sometimes (to appearance) immoderate (as that of *Rose-trees*, *Reeds*, and some other, which makes them bear and come the better,) is excellent manure, as we see it in *Straw* and *Stubble*, enrich'd as they are with *Salts*; and if the very *Earth* be roasted with the fire, it solves obstructions, laxes the Pores, renders them attractive of the Influences, and to cherish with its warmth; and the more simple and unmixt the *Ashes* be, in relation to what the Ground produces, it is the better: For as *Weeds* bring *Weeds*, so the *Ashes* of *Fruits* and *Berries* (being burnt) dispose to bring forth the same; so as no treatment of the *seminal rudiments* whatsoever, seems totally of power to annihilate their vertues; so strict is the Union of the parts, from whence their *Forms* result. The *Calcination* then of *Earth* alone, not only disposes it to produce great variety, but, if it be intense, increases the very weight of the Mold; whether from a certain *magnetisme* which it thereby contracts (which fortifies it to draw the proper aliment more powerfully) or upon what other account, let the curious examine. *Lime* is useful for cold, wet Grounds, and stiff *clays* a little *seck'd*, as over-heating the dryer.

I come next to *Marle*, of excellent use to fix light *Sand* and dry Grounds; some are for the *White* and *Grey*, others the *Blue*, and *Red* (which I think the best,) according as 'tis more, or less apt to resolve after wetting; but neither of them discovering their vertue for the first year: It does incomparably on *Pastures*; some on *Arable*, a good Coat of *Compost*, suitable to the land, being first spread, where you will lay it: If your *Marle* be very unctuous and rich, apply it less copiously; the too thick covering is the worst extremity; nor is it always to be us'd without allay and mixture with other proper Soil; for some *Marle* is more *Sandy* and gritty than other, and should be qualified with a Contrary: Give lean and emaciated *Earth*, a covering of the fattest *Marle*; hot and dry to the

the cold and moist : And this is also to be observ'd in the applications of all other *Composts* and *Medications*.

*Marsh*, and Churlish *Earth* will be Civiliz'd, by the rigour and discipline of two Winters; *bis frigora*, is the old method to make the stubborn Clod relent; and with the mixture of a little *sand*, if it be too close of Body, it will become excellent Mold.

*Clay* is of all other a curst Stepdame to almost all Vegetation, as having few or no *Meatus's* for the percolation of the alimential showers, or expansion of the Roots; whether it be the Voracious, Hungry, Weeping or Cold sort : In these cases, *Laxatives* are to be prescrib'd, such as drift *sand*, small gritty *Gravel*, *saw-dust* with *Marle*, or *Chalk*, and continual vexing it with the Spade or Plow; but above all, with *Sea-sand*, where it may be procur'd, and the burning of the Ground to *ashes*, and all that it bears, the more the better; for by no less severity will this ill-natur'd Mold be subdu'd: *Rotten-wood*, and the bottom of bavinestacks, is good ingredient to this manure; and if it be a cold and wet sort, strewings of *soot* is good; if very stiff, rubbish of *brick*, *limestone*, and such trash may properly be laid at the bottom, and on the upper part *Composts* of *Dung*; for otherwise no *limings* (which being *seckt* is raw and cold) may at any hand be applyed, especially to the hungry sort, which (as also most kinds of *Marsh-earth*) is subject to *chasm*, and gape in dry seasons; to prevent which, a discreet mixture of *ashes* and *sand* is us'd, for if it be in excess, it over-heats the latter.

I do not reckon *Loames* among the *Clays*, though it seem to be but a succulent kind of *Argilla*, imparting a natural ligament to the Earth where you mix it, especially the more friable; and is therefore of all other, the most excellent mean between extremes, fastening, and uniting that which is too loose or stony, cooling that which is hot, and gently entertaining the moisture. The *Flower-Garden* cannot be without a mixture of it, nor well any *fruit*, especially the best *Cider-Apples*, so it be accompanied with a lighter soil.

To sum up all we have said concerning Natural Improvements by mixtures of *Earth* with *Earth*, rather than *Dungs*; let us hear my Lord Bacon. He reckons up *Marle*, *Chalk*, *Sea-sand*, mold upon mold, *Pond-earth* with *Chalk*, and the several blendings and tempering of them; among all which, *Marle* we find to carry the preeminence with his Lordship, as the most pinguid, rich, and least over-heating; next to this, *sand*, as the most abounding in salt; *Chalk* more heating, and therefore proper for *Clay*; cold and spewing grounds, being suffer'd to lie a competent time to resolve before you turn it in; *earth* on *earth*, that is (I suppose he means) the under part upon the upper, or the second *spit* on the first, as we have all along directed at the breaking of fresh ground with the spade.

Another mixture he commends (and which we have likewise newly touched) of substances, which are not meer *Earth*, as *soot*, *ashes*, not the hard and dry *Cinders* of *Sea-coal* (which we are

too busie with about this Town, where the ground is naturally too hot and dry) but such as is apt to relent, and even the sprinkling of *salt*, where it is *wisely* sown.

A *third* is, the permitting Vegetables, abounding in *fixed salts*, to dye into the ground, *Pease-haulm*, *Bracks*, all sorts of *stubble* cast on about the beginning of *Winter*: So *leaves* of Trees mingled with *Chalk*, and proper *Composts* of *Dungs*, to heat and preserve the ground from sowing with them, when they are us'd alone.

A *fourth* is (what we have also touch'd) heat and comfort, procur'd by *Calcinations*, the burning of *Ling*, *Heath*, *Sedge*; covering the ground with bushes for a time; enclosures of walls and mounds, when the land lies in the eye of the weather, and in other cases, *meridian* exposures, and the warmth of the woolly fleeces of *sheep* as well as manure, folded or pastur'd: And to this we may add the very *grazing* of *Cattle*, which in some cases has succeeded better than the best *dungy-compost*, especially for old, and decay'd *Orchards*, which have been observ'd to recover to admiration, when mowing has been pernicious; for even the biting of *Cattel* gives a gentle loosening to the roots of the herbage, and makes it to grow fine and sweet, and their very breath and treading, as well as soil, and the comfort of their warm bodies is wholesome, and marvellously cherishing: But this is to be understood of places where the stems are of full growth, and where the beast cannot reach to crop.

Lastly, *Irrigation*, and watering, both by admitting and excluding moisture at pleasure: And certainly, this has (since his *Lordships* time) been found one of the richest improvements that ever was put in practice; especially, where they have the command of fat and impregnate *waters*, without grittiness, or being overharsh and cold; whether it percolate through rich ground, or, which is better, descending from eminences, and moderate declivities, from whence we find the Vallies so luxurious and flourishing.

To this belongs the cure of wet and *boggy Lands*, by cutting Trenches deeper than the cause of the evil, which proceeds from some conceal'd Springs hinder'd from emerging forth by the sluggish incumbent earth: This makes the ground to heave and swell, but not giving vent, to stagnate and corrupt both the water and the mold about it: And though it lie loose and hollow; yet it gathers no vigour from above, but remains cold and insipid. The remedy is, opening the ground till you meet with a sound bottom, and cutting your Furrow upwards to the Bog, about a foot beneath the spewing water: This is to be done in several places, and when the drains appear to have wrought the effect, you may fill them up again with *spray* and *bavine*, great and rough *flints*, *brick-bats*, *tileshards*, *horse bones*, or any other rubbish, which will remain loose and hollow, and cover them with the grassy side of the turff which you pared off, and laid apart; on *that*, throw your other Mold, which being cast up in heaps for some time, will be much improv'd with spreading; lastly, sow it over with *hay seeds*.

But



But the Cure is yet easier, if the Land lye considerably sloping; and if it happen to be a planted Ground, then cut your Trench deeper than the roots of your Trees, and apply the foresaid rubbish to intercept the moisture. About the latter end of *October*, trench the Ground all over, for near a foot and a half in depth, and when you are come within three, or four foot of the Stemmi, cut off all their larger roots sloping inwards, sparing only the *fibers*, and such of them as you find tender, and about as big as your finger; leaving also the more perpendicular to keep the Tree steady: This done, cast in some rubbish of *brick-bats*, *limestone* (not *chalk*) and other materials, that the Mold may lye easie about them, and with a mixture of good *Earth*, plenty of rotten stubble, or other soil, apply it near the Root, and fill your Trench with the rest; and if your Ground require it, (as being too cold it commonly does) add to your compost the *Dung of Sheep*, *Pigeons* or *Poultry* very well consum'd: And because *Moss* is oftner caused by starving and wet Grounds, than by hot and over dry (for both produce it) the Cure is likewise to be effected by *Ablaqueation*, and *baring the Roots*, as above; and for the latter, by a mixture of *Loame*, with the scouring of *Pond* or *ditch-Earth*, which of it self is the most excellent manure; and the planting your Trees at greater intervals, for admission of *Air* and *Sun*; since the scraping of it off (which may also be done in wet weather) is but temporary, and if nothing else be perform'd, it will be sure to grow again.

Lands which are cold and dry, are (as we have hinted) to be improv'd by contraries; namely by application of *composts*, which are hot and moist; as *Sheeps-dung*, burning and calcining of the *Earth*, with the *Vegetables* on it, and the like, to excite heat and fermentation; but which is not to be effected without repugnant remedies, and such as are of *heterogeneous* parts, to stir and lift up the Mold, and render it less unactive. If it be cold and clinging, as frequently 'tis found, there *lime-rubbish*, the small harther *Chalk*, *sea-coal-ashes*, a moderate sprinkling of *sand*, with some proper *compost* may perform the Cure.

Hungry Grounds require to have the cause well look'd into; the *water* turn'd, (as above directed) or if it want, such as is well enrich'd.

Lands that are hot and burning, allay with *Swines-dung*, as (say some) the coldest; or with *Neats*, which will certainly refresh it.

For *Earth* which is too light, there's nothing better than *Pond-mudd*, after a *winter* has pass'd upon it.

*Earth* over-rank (for there may be some too fat, as well as too lean,) *sand*, and *ashes* will take down; but still with regard to what you design to plant upon it; neither the *Almond*, nor the *Hassel* will indure a wanton Mold; and though it seem a *Paradox*, that any Soil should be too rich, (upon which some *Criticks* have suspected the Text in *Theophrastus*, which asserts it twice in two successive Chapters;) 'tis yet a Truth indubitable, and holds as well

Lib. 2. cap. 5, 6.

in *Plants* as *Animals*, which growing very fat, are seldom prolific. Some on the contrary are so emaciate, and lean, dry, and insipid, as hardly any pains will make them fruitful. Such are *Minerals*, and *Metallic Soils*, devouring *clays*, light and *asby-sands*; so again are putrid and *fungous*; others, though fruitful, producing only venemous *Plants*, *Hemlock*, and the deadly *Aconitum*; and some, though wholsom ground, may be poison'd with unskillful or malicious mixtures, and with damps and *Arsenical* vapours, which sometimes (though *natural*) are yet but *accidental*, and for a season, as when after extraordinary drouths, and stagnant air, the *Earth* hath not been seasonably open'd, refresh'd and ventilated.

Moreover, Ground is sometimes barren, and becomes unfruitful by the vicinity of other *Plants*, sucking and distracting the juice of the *Earth* from one to another: For thus we see the *Reed*, and *Fern* will not be made to dwell together; *Hemlock* and *Rue* are said to be inimicous; the *Almond* and the *Palm*, which are seldom fruitful but in Conjugation; and perhaps there are *Effluvia*, or certain inconspicuous *steams* of dusty *Seeds*, which not only impregnate places where never grew any before, but issue likewise from one to another, as in our *Junipers* and *Cypress* I observe, flowering about *April*; which are Trees of Comfort, and thrive not well alone. The *Ficus* never keeps her fruit so well, as when planted with the *Caprific*. By what irradiations the *Myrtil* thrives so with the *Fig*; the *Vine* affects the *Elm* and *Olive* (which is at Antipathy with the *Oak*, and imparts also such a bitterness to the Mold, as kills *Lettuce*, and other subnascent *Plants*) is hard to say; and why some affect to live in crowds, others in solitude: But that *Firrs*, *Pine*, *Cedars*, *Elms*, and divers other Trees aspire, and grow so tall in society, may be (as from other causes) so from their not overglutting themselves with nourishment (for *Compost* is not their delight) which inclines them rather to shoot upwards, than expand and spread.

Lastly, by *shade* Ground is render'd barren, and by the dripping of umbragious trees: To these *Air* and *Sun* may be soon restor'd, by removing of the skreens which intercept them; and yet all shade is not unpropitious, where the Soil and Climate are benign, as well as that which casts the umbrage; and of this we have a notable instance somewhere amongst the *Astomori* even in *Africa*, where the soil and the air are reported to be so genial, that the *Olive* is said to grow under the *Date-tree*, the *Fig* under the *Olive*, under the *Fig-tree* the *Granade*, under that the *Vine*, under the *Vine* a crop of *Corn*, and at the feet of the *Corn* a certain *pulse*; none of them impeded by the more than reduplicated shades. But there are some, we must confess, amongst us, which are not so propitious; Trees of all sorts (though the *perennial Greens* least) breath as much after the air as the soil, and do not thrive without it; nor except it be wholsom.

But to return to barren *Earths*, which are either out of heart, by being spent, or from the nature of the soil (in both which, the *Plants* which they produce, though never so unprosperous, run  
hastily

hastily to seed, or make an offer,) they are to be restored by the Plow, the Spade and the Rake, by stirring and repose, appositions and mixtures of Earth, *Calcinations* and *Composts*; and above all, by the eye of the Master, and dust of his feet, as the Italian Proverb has it. For after this Process, and innumerable other Tryals (mixtures of things being endless) all other sorts of *Earths* and imperfect *Molds* may be treated and meliorated; namely, if it be too hard and close, to mollify and relax it; if too loose, to give it ligature and binding; if too light, ballast; if too meagre, to fatten and impinguate it; if too rich and luxurious, emaciate and bring it down; if too moist, apply exsiccatives; if too cold, fermenting *Composts*; if excessive hot, to cool and refresh it; for thus (as we said) *Earths* should be married together like Male and Female, as if they had *Sexes*; for being of so many several complexions, they should be well consider'd and match'd accordingly, things (as was said) becoming fruitful, from the mixture of repugnant qualities; so as cold and dryness without a warm and cherishing moisture, produces nothing; for this therefore you see what choice I have presented you of Sand, Ashes, Chalk, Lime, Marle, mixture of Mold, *Calcinations*, Air, Sun, Dew, Rain, Frosts and Snows, Trenching, Drilling, Watering, Infusions, and finally, of Animal *Stercorations*, and other *Composts*, which is the next, and last part of this (I fear) over-tedious Discourse; Since indeed it is not sufficient to find out even the best, and most grateful Mold in nature, so as to relie for ever upon the same performance, without supplys of all sorts; stirring and repose, constant dressing, and (after all we have said) artificial letations likewise, to encourage and maintain it in vigour.

We proceed then in the next place to what farther advancement we may expect from *Stercoration*, and manuring the ground by *Composts*, and to discover the qualities, which may be latent in their several ferments, and how to apply them by a skilful and philosophical hand, without which they do always more hurt than good; and therefore first we will enumerate their several kinds, and next inquire, what it is we chiefly seek for, and expect from them; and lastly, how to treat them so as may render them fitting for our service.

From Animals we have the Soil of Horses, and beasts of burden, Neats, Sheep, Goats, Hogs, Pigeons, Poultry, and Fenny-fowle: We have also Flesh, Fat, Blood, Hair, Feathers, Urine, shavings of Horn, Hoofs, Leather, Skins, Fish, Garbage, Snail-mud, &c. From Vegetables, (as of nearest affinity) we have Vine-cuttings, Stalks, fall'n Leaves, Marc of the Wine and Cider-presses, Lees of Wine, Oyl, rotten-Fruit, Gourds, Weeds, Fern, Haulme, Stubble, rotten-Wood, saw-dust; refuse of the Tan-pit, Sea-wood, Linnen Clowts and old Rags; also Brine, Pickle, Ashes, Soot; and of things promiscuous, Washing of Dishes, Bucks, Barrels, Soap-suds, Slime, and Scouring of Ponds, and Highways, Dust, Sweepings: In summ, whatsoever is apt to rot and consume in any competent time, and is either salt, nutritious or fatty:



*fatty*: To which let me add, impregnating *Rains* and *Dews*, cold and dry *Winters*, with store of *Snow*, which I reckon equal to the richest Manures, impregnated as they are with *Celestial Nitre*. But with all these Auxiliaries, we are not yet to imagine, that any of them are therefore profitable and good, because they retain an heady *scent*; are *hot*, *moist*, *rotten* and *slippery*, *fat* or *unduous*, and the like, which are all qualities, that *alone*, and of themselves, effect little, till they are corrected and prepar'd; but, for that amongst these materials we detect the causes of fertility more eminently than in other substances; partly from their *fixed salts*, or some virtue contain'd in them, or rather drawn from without, and imparted to the exhausted and defective Earth; and that by such a *process*, as by converting them into a *Chyle* (as it were) it facilitates their being insum'd, *assimilated*, and made apt to pass into nourishment, promoting *vegetation*. This obtain'd, the next thing is, how skilfully to apply what we have prepar'd; and this indeed is a difficulty worthy the *heads* as well as *hands* of the profoundest *Philosopher*; since it requires a more than superficial knowledge and penetration into *causes*.

We know indeed, that the *Earth* is without any Artificial Auxiliaries, indu'd with a wonderful prolific virtue; but this, for being possible to be lost and decay, (at least for a longer time than our necessities can support) and from some grounds never to be expected without such helps, it may be worth our while a little to consider, by what expedients of *digestion*, or other ways, the desired effect of perpetuating its vigour might best be accomplish'd.

That the secret we enquire after, and which does most apparently seem to *evirtuate* towards this end, is some *Salt*, I suppose is generally agreed: For *Salt* it is which gives *ligature*, *weight*, and *constitution* to things, and is the most manifest substance in all Artificial *Composts*.

'Tis the *Salts*, which intice Roots to affect the upper, and saline surface of the *Earth*, upon which the *Nitrous* Rains and Dews descend, and the cause that some *Plants*, the most racy, and charg'd with juice of all other, (for such is the *Vine*) thrive so well amongst Rocks and Pumices, and in whatever best maintains this vital pickle.

'Tis *Salt*, which makes all cover'd and long shaded *Earths* to abound in fertility, and renders the dung of *Pigeons*, *Poultry*, and other *Salacious* Corn-fed *Birds*, so eminently effectual, before the soil of *Horses* and other Beasts, in which it less abounds, as having less virtue to attract it.

'Tis *Salt*, that gives such vigour to places, sprinkl'd with *Urine*, *Soot*, *Ashes*, &c. which have them not diluted; and to *Bones*, *Flesh*, *Horn*, *Hair*, *Feathers*, *Blood*, and the rest of those *animal* excrements: And whence those *seminal Masses* should proceed after *Calcination* of the *Earth*, when it comes to be expos'd again, is hard to divine; whence I say, they should derive their life and energy, without being destroy'd by so powerful an agent as *Fire*, unless they lurk in some vegetant, and indissoluble *salts*, (*volatile*,  
*fixed*,

*fixed*, or *nitrous Earth*) from whence they (*Phoenix* like) emerge, though I do not say without any other *specific* rudiment: But 'tis strange, what, as I remember, Dr. *Morison* affirms of the *Erysimum* or *Irio*, so seldom seen to grow spontaneously in *England* before the late prodigious *Conflagration* of this *City*, when there appear'd more of it amongst the Ruines, than was known to grow in all *Europe* besides, it being a curious *Exotic*, to be found most about *Naples* in the time of *Fabius Colonna*, and but rarely elsewhere.

'Tis *Salt*, which *resuscitates* the dead and mortifi'd *Earth*, when languishing, and spent by our indulgence to her verdant Off-spring, her vigour seems to be quite exhausted, as appears by the rains, and showers which gently melt into her bosom what we apply to it, and for which cause all our *Composts* are so studiously made of substances which most ingender or attract it.

'Tis *Salt*, which fertilizes, and renders *Egypt* so luxuriously fruitful after the inundations of *Nile*; and the *Nitrous* grounds of *Jamaica*, and other places, which cause so stupendious a growth of Plants and Trees.

'Tis the want of *Salt*, which *emasculates* the virtue of *Seeds* too long macerated in hungry water, and renders floated wood such unprofitable *fuel*, and to turn into such insipid *ashes*; and whatsoever it be some *Plants* may appear to affect, as to the external differences of appetite, some of them seeming to draw in more *Air*, some *Earth*, and others *Water* in extraordinary measure, according to the several contextures of their parts, or by whatever *Magnetisms* and attractives, it is still to come at their *Salts*, which doubtless create that inclination, compose the various *saps*, and *juices* which they present us. Nay, what if I should say, that all the several parts of *Vegetables* were endow'd with their peculiar and distinct *Salts*, through different *motions*, *complications* and *percolations*? or, that so many *Earths*, so many kinds of *Salts* digested and transported by their different *Vehicles* and strainers; and those also, though unlike in quality, yet perfectly congruous to what they produce and nourish? But what this *Vehicle* or *Menstrue* is, I contend not; 'tis evident, that *Salts* unite best with water, *Vernal* and *Autumnal Showers* and *Dews*, as the most apt to convey their insinuations. You know, who have dignified *Salt* with the prerogative of being nam'd *Element-earth*, the *vigour* and *close* of all things; yea, the first and last of *Elementated* bodies: What shall I say, *quid Divinum*, the Original of all *fecundity*; nor can I say less, since there was nor *sacrifice*, nor *discourse* acceptable without it. And verily upon serious contemplation of the premises, and the little experience I have had of their effects, in this work of *vegetation*, as far as I am able to penetrate into causes by them, I am not displeas'd at the magnificent *Epithetes* which are given it. In the mean time, I know there be, who are so averse to this Doctrine, as to prefer *Water* before it, nor contend I with them, so they allow the near affinity and friendship which is between them, as I have deduc'd it at the entry of this Discourse, where I describe my *Autoptical* observations of the several *Earths*; all

that I pretend from hence, being only to excite us to make diligent enquiry, what may more likely be the *cause* of *Vegetation*, and whether *Salt* have not a *Dominion* almost *Monarchical* in this great Work of Nature, being so absolute an ingredient in all our *Dungs* and *Composts*, which I am next going to speak of. I cannot in the mean time but wonder, how a thing so eminently sacred, and fertile, should come to be the *Symbol* of *Malediction*, when, as the custom was, they us'd to sow *Salt* in the place of *Cities* they had eras'd and curs'd, there being in all Nature nothing so pregnant and fruitful, unless it were to invite the *Plow* to go there, and that the fertility of the spot for *Corn* and *Grain* might divert them from rebuilding and covering it again with houses. Indeed to apply *Salt* in excess, burns the *Earth* for a time, so as nothing will grow upon it; but when once the rains have well diluted it, it springs up more wantonly than ever: This I daily find by sifting common *Salt* upon the *gravel-walks* of my *Garden*, and for which cause I have left it off; and we find that the *Earth* it self over-marl'd and too highly manur'd is as unprofitable, as if it were barren for the time, and that there is in all things a just proportion to be observed.

But neither all this while do I pretend, much less determine, that the *Principle* I so much celebrate, is our common artificial *Salt*, compos'd of *Urine*, and the like, which of it self is so burning and destructive, till its *acidity* be qualified by the *air* and *showers* from Heaven (which endows it with a natural *magnetism*, to receive their irradiant virtues;) but a certain more *unctuous Spirit*, or *airy Nitre*, pregnant with a *vital Balm*, which is the thing we endeavour to find in these materials of *Composts*: But whether it be *accidental*, or *essential*, *corporeal*, or more *spiritual*, *principal*, or *organical*; or (to speak with the *Chymists*, and later *Atomists*,) whether communicated by *effluvia*, *salts embryonate*, or *indigested* and not *specificate*; from *ferments*, *spermatie vapours*, *influences Celestial*, or from liquor only impregnated and concocted, I leave to those who affect to wrap up *easie* notions in *hard* and uncertain terms, whilst the thing would be of use to the *Philosophical Husband-man*, were their reduction into just *Classes*, for the better discriminating of the several *Composts*; as what there's of them most abounds in *Nitrous*, or *Urinous* parts; or what of the nature of our crude, common *Salts*, and *Kali's Mineral*, or other; and thereby be able to pronounce, *where*, and *how* we may apply them with safety and success: For some we know are plainly exitial and deadly to *Plants* (such as the *Mineral*,) others properate too fast; and some are sluggish, and scarce advance them at all. It would therefore be consider'd, whether any *Salts* do universally nourish all *Plants* alike? or rather partly, some *one* Plant, some *another*; for upon the clear decison of this *secret* depends all that is truly curious in this affair; laying, as I do, for *position*, that the improvement of all the *Earths* and *Soils* I have spoken of, results from some *Salt* or *Spirit* (call it which you please) as from an indispensable *Principle* in this of *Vegetation*, and perhaps



haps the *first rudiment of life* in all things else : And till we shall arrive to this (by what I have observ'd in the discreet use even of our common *Salt, brine, the effects of Urine and the like,*) I firmly believe, that were *Salt-Peter* (I mean fictitious *Nitre*) to be obtain'd in Plenty, we should need but little other *Composts* to meliorate our Ground ; since, whether that which so fertilizes it, by any mixture we can yet devise, effect it from any other cause, is greatly to be doubted ; nor do I think, but the charge of extracting it, (at least sufficient to impregnate *Water* in convenient quantity) might be compass'd by the industrious *Farmer* without much inconvenience, or the least difficulty, were he competently instructed in the process of *Calcination, Resolution, Percolation, Evaporation and Separation*, put into honest *English*, and easily to be learn'd : Soon we should then see, that this were not to be extracted altogether out of stinking *dung*, and found in heady trash (which yet is material) but rather in the well-impregnated and natural Mold it self, charg'd with a more generous spirit, or medicinal *Nitre* (in congress with a certain *sulphur*) capable to warm, and excite to vegetation, beyond all we can promise from any meer artificial *ferments*, much less our common mixtures, and ways of *stercoration*, which in time grow cold and languish, and are so quickly check't.

And now after all this, I dare not say, that there is nothing more than this meer *Salt*, or spirituous *Nitre*, which concurs to those desir'd effects, that promote fertility, and set the ferment on working : What *ignite particles* beside, and special *Composts* there may be of consanguinity and near alliance to the respective *vegetables*. (which we know to be of vast difference one from another,) we pretend not to determine ; for some *Plants* are very brisk and quick, others insulse and flat ; some are acid, others more *dulcorous* and sweet ; they are *salt, sowre, luscious, austere, hot, bitter, moist, dry, astringent*, and of strangely different qualities, not to speak of their effects, which it were hard to number. Therefore, that the same *Compost*, or remedy should be promiscuously universal, is the more unlikely, and would be well consider'd : But admitting this to be salvable, and that we find by experience, a well digested *Compost* beneficial to almost all the vegetable Family ; may it not in all probability spring from its participation of all those varieties of *ferments*, (in some at least, though in different proportion) which we have been speaking of ? as by which each single *species* draws and *assimilates* that only to it self, which it finds most *amicous* and congruous to its nature ; and if so it be, then have we no more to do, than to learn how to prepare our *Ferments*, and apply them accordingly ; namely, *acid* to *acids*, *sweet* to *sweets*, *benign* to *benign*, and so the contrary, as we would promote its natural quality ; and this perhaps, either by reducing some parts of them into *Composts*, as their *leaves, stalks, fruit* ; or by some more refin'd extraction of their *Salts*, convey'd in proper *vehicles*. And for the better administering of this, the nicer *textures of vegetables* should diligently be consider'd ; their several

vessels, and *Organic* parts; since every impregnate liquor is not presently fit for all alike; the figuration of their *Labiola*, and curious pores (which 'tis likely draw several juices and spirits) being very different; as the most sagacious Doctor *Grew*, and learn'd *Malpighius* (both Ornaments of this Illustrious Society) have begun, (I think I may say, well nigh *perfected*) the way to us, in those elaborate *Anatomizations*, which the world will shortly admire. I insist the rather on this, because we find some *Plants* to reject divers rich compounded liquors, especially such as pretend to work Miracles in the *Protean* changes of *colours*, and other qualities, from *mineral* or other substances; and that the very *Rains* and *Dews* differ in several *Climes*: So as even from this reason alone, to instance in no more, all *Plants* do not easily become *denizens* in all places:

—Nec omnis fert omnia tellus.

I might add to this the niceness of their *palates*, and fondness to their own *homes*, and to live some in *consort*, some in *solitude*; some on dry banks, some in watry puddles, and some as it were in the very air, and fiery soils; nay, some which are found to destroy the vegetable virtue where they grow; for such are said to be *Oæde*, *Hemp*, &c. and if it be true and constant, that all our imbibitions of *Salts* and *Composts* signifie little to *Earth* preimpregnated with a *salt* or virtue, different from what the *Plant* does naturally delight in, some obscure footsteps of which every *Plowman* seems to discover, which makes him change the Crop in some places yearly: For the first, second, or third burden of the same grain, especially *Wheat*, will exhaust that which is its proper aliment, and then leave the rest to more ignoble grain, which will be found to thrive well enough, till at last several successions of different Seeds quite wear it out, and then it must repose, or be manur'd with *Composts* for fresh life and vigour. And to this we may add, how some *Plants* again require little change, or help of Art; such as most of the *Perennial Greens*, and amongst these, the most *resinous* and *oylie*, as the *Pine*, *Fir*, *Cedar*, &c. which thrive on barren Hills, and grow in Rocky Crannies, without any Earth almost to cover and protect their Roots. Of this sort I have a *Cedar-Table*, which was saw'd out of a *spur* only of a monstrous Tree growing in the *Barbadoes*, which held six foot long, five foot broad, and three inches thick, form'd, and wrought as it stands upon the frame; and his *Royal Highness* had another of a much larger dimension, namely eighteen foot in length, and nine in breadth, cut out of the Stem, which was of prodigious growth, to be fed and nourish'd as it was between the barren Rocks. But to proceed; we find that most *esculent* and *culinary* Roots do rather chuse a rich, natural and light Mold, inclining to sand, than what is forc'd, or overmuck't; and how much they yield to soil, growing hard, short and fibrous, and contract the smell and relish of the *ferments*, apply'd to accelerate their growth (for according to the *Italian* Proverb,

verb, *Ogni pianta serba della sua radice*, Every Plant has a smack of the Root) I have already mention'd ; so as to confide in *Dungs*, as our vulgar *Gardners* about this *City* do, is no incouragement ; and therefore some, not without good reason, prefer the *Corn* and *Grain* which is reap'd from *Marle*, *Chalk*, *Lime*, and other more natural Manure, before what is produc'd from a Crop which grows on a *Dung-hill* in comparifon ; experience alfo fhewing, that the caufe of *smuttinefs* many times proceeds from the impurity, and ranknefs of the dressing ; and therefore we omit to enumerate amongft our Soils, *Stercus humanum*, which howfoever preferr'd by fome before all other, and mention'd by *Columella* with that of *Fowl* and *Cattel*, does (unlefs exceedingly ventilated and air'd) perniciously contaminate the odor of *Flowers*, and is fo evident in the *Vine*, as nothing can reconcile it.

To give fome instances of the nature of particular and fimple *Composts*, (for fo I take leave to ufe a *Solecifm*, till they are blended together with the reft, as we fhall afterwards fhew) what ever they be, they are by no means fit for the *Earth*, and ufe of the Husband-man, unlefs, befides their richnefs, they be perfectly well digefted, made fhort, fweet, and almoft reduc'd to a crumbling Mold ; fo order'd, as not only not to lofe any of their virtue, but improve it, and to excite, entertain, and communicate heat, and vegetative Spirits to, what you fhall apply them: And that this is not done *per fe*, that is, by immediate application, without prejudice (unlefs it be for the *Hot-Bed*, which yet has an *Intermedium* of Mold) experience tells us, efpecially in the foil of *Animals*, which is of all other the moft active, as confifting of *Heterogeneous* parts, and repugnancies, without which no fermentation could be obtain'd. Now fince many of thefe being frefhly made, are not only fenfibly hot, but *mordacious* and burning, they are with caution to be us'd. That every kind of *Earth* (as well as the *Dung* of *Beafts*, &c.) has its peculiar *ferment*, and operates accordingly, either by attracting fomething to it, or embalming what approaches it, fufficient has been faid ; together with directions how to mingle and attemper it, as beft may qualifie it for Culture. That we may do the like with the feveral forts of *Soil*, let us confider what their natures are, what their correctives, and how to apply them.

*Horse-dung*, the leaft pinguid and fat of any, taken as it falls, being the moft fiery, excites to fudden *fermentation* above any ; wherefore, as we faid, 'tis then fit only for the *Hot-Bed*, and when that fervour's paff, may be fpread on fields, where we would have a rank Grafs to fpring ; but is at no hand to be admitted into the *Garden*, or where you defire good *Roots* fhould grow unlefs the ground be very ftiff, cold or wet, and then too it had need be well rotted, left, inftead of curing it, it leave *couch*, and pernicious weeds, worfe than the Difcafe ; the *feeds* of *Hay*, and other *Plants*, of which the *Horfes* eat, coming oftentimes intire from them: And fuch *vegetables* do commonly fpring up from the *Soil* of *Cattel*, of which they chiefly eat ; as long *knut-grafs* from this Beaft ; fhort, clean and fweet pafture from *Sheep* and *Cows* ; the *Sonchus*, or Sow-



Sow-thistle from the *Swine*: So as ground muck'd with *Horse-dung* is always the most infected of any, and if it be not perfectly consum'd, it makes your *Roots* grow forked, fills them with *worms*, and imparts to them an unpleasing relish; but being laid on at the beginning of *Winter*, and turn'd in at *Spring*, it succeeds sometimes with *Pulse*.

The Soil of *Asses* is highly esteem'd, for its being better digested by the long *mastication* and chewing of that dull Animal; but since we have no quantity of it in this Country, it does the less concern us.

*Neats Dung*, of all other is universally the most harmless, and the most useful; excellent to mingle with *sandy* and hot grounds, lean or dry, and being apply'd before *winter*, renders it the most like *natural Earth*, and is therefore for the *Garden* and *Orchard* prefer'd to any other. To use it therefore with the most certain success in such thirsty Grounds, apply a plentiful surface of it, so blended, as the rain and showers may wash in the virtue of it thoroughly; but this is best done by making the *Dung* the finer, and what if reduc'd to *powder*, sprinkl'd for the *Garden*, or otherwise working it in at a soaking wet (not stormy) season, and then leaving it also cover'd with it for some time, if the rain descend in too great excess.

The next is *Sheeps Dung*, which is of a middle temper between that and *Pigeons*; profitable in cold Grounds, and to impregnate *liquors*, of choise use in the *Garden*.

The *Dung* of *Swine* is esteem'd the coldest and least *acrimonious* (though some there be who contradict it) and therefore to be apply'd to *burning* Lands; but always so early *interr'd*, as never to appear above ground, where it is apt to produce *weeds* in abundance, from the greedy devouring of what that *Animal* eats. This, though not so proper for the *Garden*, is said yet to *edulcorate* and sweeten fruit so sensibly, as to convert the bitterest *Almond* into sweet, and therefore recommended, above all others, for experiments of *change* and *alteration*: Some qualifie it with *bran*, or *chaff* well consum'd, greatly comfortable to Fruit-Trees, but especially the *hairs* and *bristles*, buried about the *Roots* of Pear-Trees.

*Pigeons Dung*, and that of *Poultry* (especially of *Aquatic Fowls* which is too fiery) full of *volatile salts*, is hot and burning, and therefore most applicable to the coldest ground. There is nothing so effectual to revive the weak and languishing *Roots* of *Fruit-trees* laid early to them; but first be sure they pass their *mordicant* and piercing spirits, and be discreetly mixt: Be this therefore observ'd as a *constant Rule*, that the hotter *Composts* be early and thinly spread, *et contra*, the Colder.

Very efficacious is this *Dung*, to keep *frost* out of the *Earth*, and therefore of great use to cover the Mold in *Cases* of *Exotic* and tender Plants; but if the heat be not well qualified, the very *steam* will kill them in a moment; therefore let a full *winter* pass over this *latation* for most uses. The best way of preparing it, is  
to

to reduce it into *powder*, and mingle it with the Mold, and to water with its *infusion*, which alone does wonders; or, if it have been well expos'd and abated, you may use it at the *spring* without addition: But if you desire something that is exquisite, macerate it well rotted in the *Lees of Wine*, stale *Urine*, and a little *Brimstone* beaten very fine, to mingle with your *Earth*, for one of the richest *Composts*. Then is this only to be noted, that, as the effect of this *Dung* is suddain, so it lasts not long, and therefore must the oftener be renewed.

The flesh of *Carrion*, and dead *Animals*, being (as, I think, my Lord *Bacon* tells us) prepar'd already by so many curious *Elaborations* of its *juices*, is highly effectual; but it should be very well consum'd, and ventilated, till it have quite lost its intolerable smell, and therefore never apply'd too crude.

*Blood* is excellent almost with any Soil where *Fruit* is planted, especially the *Mural*, to improve the blood of the *Grape* of great advantage, being somewhat *diluted*, and pour'd about the Roots. It has been assuredly reported by divers Eye-witnesses, that after the *Battel of Badnam* fields in *Devonshire* (where the late Lord *Hopton* obtain'd a signal victory) the *Carnage* being great, and happening in that place; the *blood* of the slain did so fertilize the fields (where *Corn* had been sown a little before) that the year following produc'd so extraordinary a *Crop*, as most of the *Wheat-stalks* bare *two, three, four*, yea to *seven* and some even to *fourteen* Ears, a thing almost incredible: The Owner of the Land seeing his ground so miserably trodden by the *Horse* and souldiers after the conflict, intended to resow it, as believing all his former labour lost; but being dissuaded from his purpose (perhaps to make the experiment) it happen'd as you have heard.

*Urine*, for being highly spirituous and sharp, had need be well corrected, and then, being mingl'd with other *Composts* to allay its acrimonious salt, it hardly has its equal.

*Hair, Horn-shavings, Bones, Skins, Leather, &c.* are deeply to be buried, and so as not to touch, but lie about the Roots: These, with *Rags*, coarse *Wooll* and *Pitch-Marks*, improve the Earth, as being full of volatile salts, drawing, and retaining the dews. And *Fish* is likewise spread to great advantage of Grounds, where 'tis to be had in plenty; and for being quickly consum'd, may soonest be apply'd. Welcome to *Vegetables*.

The *Marc* and pressings of the *Grape* are good *Compost*, and so is the *Lees of Wine*, mingled with the Mold: It is of singular comfort to the Roots of *Orange-trees*, and *Cafe-Plants*; and if you sift a little *brick-dust* with it, and bury it near the Roots of *Rose-mary*, it will thrive wonderfully. It may be a laudable *Compost* for moist grounds, where that Plant so unwillingly grows.

The *Leaves* of Trees are profitable for their own Fruit, and natural, being well rotted, and not musty: The *Peach-leaf*, hurtful to Cattel, is excellent for the Tree from which it falls; and the *Walnut-leaf*, noxious to the grass, is helpful to the Tree.

*Duck*

## A Philosophical Discourse of EARTH, &amp;c.

*Duck-Weed*, the slime and spongie *ouze* of stagnant waters, mixed with proper mold, make a kind bed for *Aquatics*.

*Saw-dust*, *Rotten wood*, found in the hollow of decay'd Trees, under the *stacks*, and where Trees grow thick together, as in great and old Woods, but especially, that which is taken out of an inveterate *Willow-tree*, is preferable to any other for the raising of *Seedlings* of choice *Plants*, mix'd as it should be with a little *Loam*, *Lime-rubbish* and *Mold*, as we have taught. This, and the rest should be well ventilated, and is of great effect to loosen and mellow ground, as tenacious of moisture.

*Wood-ashes*, rich and impregnate with *salts*, are fit for wet Ground without mixture, and in pasture, excellent, not sifted-on over thick : In the *West-Indies* near *Guatemala*, *Gage* tells us their *Manure* is the burning of Trees to *Ashes*, of which they do not spread above one *Bushel* upon an *Acre* : It likewise kills the Worm ; but in Earth which is subject to over-heat and *chap* much, *Ashes* and burning *Composts* do but increase the feavor, and therefore contrary remedies are to be sought ; such as *Neats* and *Swines Dung*, but not so when Lands are naturally, or accidentally cold : Wherefore we should endeavour by all means to detect, as far as we are able, the quality predominant both of the *Earth* we would improve, and the *Composts* we apply, and not throw them on promiscuously upon every thing without considering of what temper and constitution they be ; for Grounds are as nice as our Bodies, and as obnoxious to infirmities upon every defect and excess ; and therefore it requires skill, and no little study to be able rightly to marshal this *Materia Medica* (as I may call it) of *Composts*, the virtue of which does sometimes lie very hidden ; at least, if that be true which Sir *Hugh Plat* affirms, that what we all this while seek after, is indeed altogether invisible to humane eyes, and to be discern'd only by the eyes intellectual, because 'tis vail'd and clad under so many different bodies, whereof some are more ponderous, such as *Marle*, *Chalk*, the *Dung* of *Beasts*, &c. some more light, as their *Flesh*, *Bones*, *Hair*, &c. and some yet lighter, as *Grain*, and generous *Seeds* ; for in such as have Virtue to multiply their own *Species*, that Spirit is invested with a very thin and curious integument, as in effect we have instanc'd in the *Blood* and *Flesh* of *Animals*, so much more powerful for the enriching of Land than their *Dung* and *Excrements* ; this industrious man computing it to no less than *twenty* times, and to the same advance above this, *Hair*, *Wooll*, and *calcin'd Bones*, &c. and as to the courser Soils, that the *Dung* of *Pigeons* and *Poultry* does as far exceed that of *Beasts* which feed on gross Vegetables ; and tells us, it has been found upon experience, that one load of any sort of *Seed* contains as much Virtue as *ten* load of ordinary *Dung* ; and therefore 'tis advisable, that upon all removals of *Corn-ricks*, *Hay stacks*, &c. the Husbandman reserve all he can of the *bottom*, *offal* and *shakings*, and to mingle it with *Chimney-foot* and *Blood*, and with that to reduce it into the consistence of a *paste* : To this add as much dry'd *Neats-dung*, temper'd with *Urine*, and made up in cakes



cakes as big as household loaves, and after all is well dry'd in the shade, crumble them to dust, to be sifted or *sprinkl'd* on the ground for a very considerable improvement; we say *sprinkl'd*, because they should never be too *thick*; especially for *Corn* which it either cloyes, or over-heats, according as 'tis qualified: Thus, *Pigeons-dung* burns *Seeds* on hot ground, but is excellent for *Barly*, &c. sown on the colder mold.

Of like effect is *Earth* blended with *Malt-dust*, or putrified and decay'd *Corn* reduc'd to *Meal*; so is the dust of old *Fur-bushes*, (in *Devonshire* call'd *Dress*;) but this *last* should not be taken in *Seed-time*, lest it infect the Ground with a Plant not easily extirpable.

*Lastly*, The *Mud* of *Ponds* and stagnant waters of *ditches*, shovel'd up, and well air'd, is best apply'd to *Roots* of *Trees*, but especially the *dust* of unstonny *High-ways*, where the drift of *Castel*, and much passage is: Let it be carried off from *March* to *November*; for it being already a kind of refined Soil continually stirr'd and *ventilated*, there is no *Compost* preferrable to it for any use: It is prepar'd in the highest degree, and will need no wintering, but may be us'd immediately; and so may *straw*, *hauhm*, and other *littier* tramp'd on in dirty streets, after it is a while rotted and mingled. Mr. *Ray* tells us that in some places about the *Alpes*, he found them sowing *dust* upon the *snow*, as he supposes, for manure, and to fertilize the dissolution.

Thus with no little industry are found out the several kinds of *Composts*, and materials of improvement, and what is the most genuine and true medicament of every Soil for *Arable*, *Pasture* or *Garden*. I do not say all, or as if there were no more; for what if indeed there should be as many sorts of *Composts*, as there are of *Ferments* or *Salts*; and as many sorts of *Salts* as there be of *Vegetables*, or any other putrifiable matter? The more there be, the greater ought to be our industry and skill to be able to distinguish them, and to know how and when rightly to apply them.

Nor is it sufficient to consider the nature of the *Earth*, *Mold*, and several *Composts*, but of the very *Plants* themselves, for the application of what you administer, be it for Food or Medicine; as if they be cold of Constitution, to make use of the hotter *Composts*; if hot, to prescribe the cold: For instance in a few of the most useful only:

*Fruit-trees* do generally thrive with the soil of *Neats* and *Hogs*; most *Flowers* with that of *Sheep*, but especially *Roots*. *Peter Hondius* tells us (in his Book intitl'd *Dapes inemptas*) that by the sole application of *Sheeps-dung*, he produc'd a *Reddish-root* in his *Garden* as big as half a mans middle, which being hung up for some time in a Butchers shop, people took for an *Hog*.

*Apples* affect a pretty rich soil, with a dash of *Loam*, but they will bear even in *Clay* well soil'd, and mix'd with *Chalk*, especially the more hardy winter fruit; and in *Chalk* alone for some years, but they produce, though sweet, not so large Fruit: But both *Apples* and *Pears* have a better relish in Grounds that are not

over-moist, and where they may stand warm, and the last will prosper well enough where the soil is mixt with *gravel*, and has an harder bottom.

*Cherries*, Summer and Stone-Fruit, such as have their Roots like thumbs, desire a fine light Mold, *sand* or *Gravel*, with *Chalk*, and good *Compost*, unless it be very coarse and stony, in which case it would be well soil'd, and the pit you plant in, fill'd with rich Mold, as far as the Roots likely use to extend before they reach the *Gravel*, so as to make good spread; and this to be renew'd every third or fourth year; and for this reason it is profitable sometimes to bait sterile Grounds, by laying your *Composts* at reasonable intervals, thereby to tempt and allure the Roots towards it, and keep them from wandering, which they will be subject to do in search of fresh nourishment: For to bear constantly well, and much, *Fruit-trees* must have frequent *letations*. Nor are we to judge, that what is excellent Ground for one sort, is so for another; since that which is perfectly good for *Corn*, is not so for all *Fruit-trees*, and a slender straw will be fed and brought up with a great deal less substance and virtue, than what will serve to furnish the stem, bulk and head of a fertile and spreading Tree.

*Vines* (than which there is no Plant more sensibly retains the different qualities of *Earth*, or whose juice is of more variety) rejoices in light, but vigorous, Mold, rather *Sandish*; and inclining to dry, than either fat, luxurious or moist. *Lime* temper'd with *Blood*, exceedingly recreates it, after the first accidental heats are pass'd over.

The *Fig-tree*, (though affected to dry Grounds) is no lover of *Stercoration*, yet in some Countries they apply *Oyl-Olive* and *Doves-dung*, to cause them to bear early fruit; but omitting the *Oyl*, if the *Dung* be mingl'd with *Lime* and *Ashes*, it is not to be reprov'd: This *Fruit* thrives, and ripens even in the shade, and *Northern* exposures with us in the *meridional* parts of *England*.

*Artichokes* thrive exceedingly with *Sheeps-dung*, which apply'd to the Roots make them produce very great heads: In the Island of *Jersey* they use *Sea-wrack*, to a wonderful improvement of that plant.

*Melons*, *Asparagus*, and most hasty growers, participate evidently of the Soil; and therefore we have already shew'd, how new, and heady dung contaminates; and this is (amongst other) the reason why in the more Southern Countries (where they are planted in the natural and unforc'd Mold) they are so racy and superiour in taste and flavour to ours. I should therefore recommend the use of *Sheeps-dung*, well reduc'd, or rather the ashes of burnt straw, and the hotter dungs *calcin'd* for some tryals to reform it; or, as they do in *Italy*, mingle *Dust* and *Earth* manur'd with *Sheeps-soil* and *wood-ashes*; if after all we have said, the cause of our application of *Composts* and *Dungs* to these rarer and choice productions, be not to prevent the rains only; for otherwise too rich Soils impair the most delicious Fruits, rather than improve them; and *Grapes* and other Fruits are sooner ripened which stand near the Highways,

ways, much beaten by passengers, than by all that you can lay to the Roots, or spread on the Ground for that purpose, the *Dust* investing both the Tree and Fruit with a kind of refin'd soil, mellow'd with the dews and gentle showers which fall from Heaven.

To give some instances; *Roots*, as we have shew'd, desire deep Ground; *Fruit-trees* not so, which should never go deeper than the usual penetrations of the Sun; for no farther is the Mold benign: Besides that they but too propensely sink of themselves, especially *Bulbs of Flowers*, whose fibers easily draw them down, and then they change their artificial and accidental beauty, and (as we call it) degenerate; but *Trees* will grow and thrive, if planted on the very surface, with little covering of Mold, so it be oft refresh'd and establish'd against the wind. Besides, we find, that even the goodliest *Fruit* (as well as some *Timber-Trees*) have many times the hardest footings, with reasonable depth of Earth: So little does it import to have it profound; and therefore in soft and deeper *sands*, they thrive nothing so well, as on *Chalk* and *Gravel*, so long as the root can be kept from descending; in which case you should (as we shew'd) bait the Ground towards the surface, and keep the roots from gadding too far from the stem; for the lower roots are frequently starv'd by the upper, which devour the nourishment before it arrive at them: Thus *Gardeners* should sometimes humour their *Plants*, cook, and dress their *foods* to their appetite, and as they can well digest it.

To give some other profitable instances of this nature; In *Transplanting Trees* (beginning early, and when the *Earth* is most tractable) endeavour to make your Mold as *connatural* to that of the place or nursery from whence you remove them, as you can. 'Tis not therefore material, it should be so much richer; but where *Imp-Gardens* are poor, the tender *Plant* (like a *Child* starv'd at *Nurse*) does seldom thrive where ever you set them; and therefore they should have fair and spreading roots, and be well fed, what ever some pretend. For other rarer shrubs and Plants, the *Orange* (*Herrera* tells us) thrives well with the *ashes* of burnt *Gourds* and leaves, and needs not change of Mold, even in the *Case*, above twice a year, and that towards the surface; but *Anonum Plinii* is a strange waster of *Earth*, and should continually be enrich'd and planted as it were all in *dung*; so the *Myrtle* and *Pomegranate*, whilst the *Red-Rose*, *Capers*, *Sampier*, and other Shrubs and Plants thrive better in *Gravel* and rubbish; *Sage* with *ashes*, and so *Porcelain* with dust and sweepings: *Rue* affects the dry Mold, *Lettice* the moister; *Flowers* for the most part detest the *Dung-hil*, but if any, that of *Sheep* or *Neat* mixt with *Loam* and light *Earth*: *Tulips* delight in change, and rather in poor than rich Mold; yea, sharp, and hungry to preserve their *variegations*. But because 'tis sometimes troublesome to transplant them yearly; place a layer of short *stable-litter* a foot beneath your Mold, and you will find they may remain unremov'd for some years without prejudice. The *Iris* loves the dry beds; *Crocus*, a mixt, rich and light soil: *Carnations* would have a *Loamy Earth*,  
qualified;



qualified, if too stiff, with *sea-sand*, and *Sheeps-dung*; if too poor, with richer Mold; so the *Peony*, *Anemony*, *Ranunculus*, and other Flowers; but then lay it at the bottom, such as you take from the last years *Hot-bed*, giving it a surface of *under-turf*, which has been foder'd on, sweet and air'd: In this to plant your Roots, but so as not to touch the *artificial* Soil, but rather let it lie about the *Pasture-Earth*, in which your *Bulbs* should always be planted: For all *dung'd* Earths canker the roots of *Flowers*, whilst their fibers, reaching the heartier Mold, draw from it without danger. But if you would indeed be provided of excellent Earth to plant most *Flowers* in, lay *turf* of *Pasture-ground* in heaps for two *Winters*, till it be perfectly consum'd: This is also admirable for *Tuberous* roots, and indeed all up-land-mold, whether *Sandy* or *Loamy*, may be made perfectly good with *Neats-dung* laid on the surface about *Micahaelmas* for one year, that it may wash kindly in; then in *September* after, pare this turff off as thin as you can, and for the first foot depth of *Earth*, you have bedding for *Bulbs* and *Tuberous* Roots superiour to any other. Another proper mixture (much in esteem with our *Gardeners*) is hollow *willow* Earth a fourth part, sifted from the grosser sticks, with almost an equal portion of *Sheeps-dung* (*Lauremberg* says, *Goats* is better) with a little natural Mold; and indeed this is excellent to raise any seedlings of *Flowers*; but for the more minute and delicate, such as *Cypress*, *Mulberie*, the *Samara* of *Elme*, and the like, prepare a Mold almost of powder, gently refresh'd with a dewie *spurge* or brush, not with the watering-pot, which plainly hurts it.

*Auricula*, *Anemonies*, &c. should be raised in the *Willow-mold* describ'd above, but planted forth where *Neats-dung* and *Loam* is sifted among the *pasture* Earth.

The *Pine* and bigger *kernel*s make great advance by being coated with dung, which being grown to great Trees abhor in. Touching change of *Crop*, something has been said already, and *Pease* degenerate betimes, at least in two or three years, be the Land never so good; so 'tis observ'd, that most Plants long standing in the same bed, impair both the Ground and themselves, especially *Serret*.

To Conclude; for a general good *Garden-soil*, take the natural *under-turf*, if it be not too stiff; add to it a quarter part of *Neat* or *Sheeps-dung* perfectly consum'd; one bushel of *slack'd Lime* to each load of Mold, with some sweet, though rotten *Wood-pile* or *Willow-Earth*, mix it well together; and you have a choice composition for all your rare *Exotics*, *Oranges* and *Case-shrubs*; remembering to place the spray of rotten bawins, hampers or baskets, to keep the Mold loose, with *Lime-stems*, *Brick-bats*, *shells* and other rubbish at the bottom, that the water may pass freely, and not rot the *fibers*: And therefore be careful never to make your *Cases* close below, but rather so *loose*, as to be able to keep the course materials from dropping through, whilst *auger-holes* (though never so thick boards) are apt to be stop'd up, and then your roots do certainly rot, and your trees grow sick. The same is to be observ'd

in

in *Pots*, and that you place them about an inch from ground, that they may freely drain, and as freely receive refreshing. But I must not quit these curiosities, to speak of the cooler Composts, till I have describ'd the best *Hot-bed* that I know of.

Dig a Pit or *Fosse*, *hot-bed*-depth (four foot is sufficient) and of what figure and dimension you think will best entertain your furniture for it; if it be twenty foot in length, and ten foot broad, I think it competent: Line the sides with a wall of brick and half thick; fill this pit with fresh soil from the stable, trodden as other *hot-beds* are, but without any Mold on the surface. In *this* place *Wooden-cases*, made like *Coffins*, (but not contracted at the extremities, nor hidded) of what length and breadth you think best, but not above a foot in depth; let these be Dovetail'd, with wooden handles at each end, to lift in and out, and lastly, board full of auger-holes at the bottoms: Your *Cases* thus fitted, fill them with proper Mold, such as you would sow *Melon-seeds* in, or any other rare Seed, and thus place them in your bed of *dung*. The heat will pass kindly through the perforations, and continue a cherishing warmth five times as long as by the common way of *Hot-bed*; and prevent you the trouble of making new and fresh, for the whole process of the *Melon*, or what other of choicer Plants, require more than one removal: The heat of this bed continues eight or ten weeks without need of repairing, and if it should, 'tis but casting in some fresh-made soil and *lissier*, beneath, and about your *Cases*, of which some you may glaze *Cheseron-wise* at the top, and with *spiracles* or casements, to refresh, and give them Air and Sun at pleasure. And these *Beds*, where you cannot conveniently sink them for want of depth, because of water, you may build above ground as well; and you may, or may not extend a Tent over it, to protect it from Rain, Wind and Sun, according as you find occasion. But thus have you a neat and useful *hot-bed*, as I have been taught to make it by the Right Honourable, the late Lord *Vicount Mordant at Parsons Green*, whose industry and knowledge in all *hortulan* Elegancies requires honourable mention. *Note*, that ordinary fresh mold, so it be not poor, and very lean or apt to clog, is a better surface for the *Hot-bed*, and to entertain and cherish the most curious *Seeds*, than what *Gardeners* universally make use of, *sticke* and *over-loose*, at least let a due proportion of *natural Earth* be sifted amongst it.

And now at last I am come to set down the several ways of preparing *Composts* of *Dungs*, and those other ingredients we have mention'd, and begin with the rudest, as that which best accommodates to the grosser part of Husbandry (which yet requires a special maturation) and so descend to the more refin'd: And these I distinguish into the *moist*, the *dry*, and the *liquid* for *Irrigation*. But first, hereby the way greatly to be reprov'd is the heaping of a deal of indigested soil, and other trash, expos'd (as commonly we find it) to the heat of the *sun*, continual *ruin*, and drying *winds*, as it lies in the wide field, without the least coverture or shade; by which means, all the virtue is drawn forth and carried

carried away, leaving little more than a dry and insipid congection of *Caput Mortuum*, and perhaps a florid green Circle, or *Fairy dance* at the bottom, which the impregnated rains have enrich'd with what it has wash'd from the heap; wherefore to prevent this, and make one load of our prepared Soil worth ten of it:

Cut a square, or oblong *pit* of thirty or forty foot in length, at the least four foot in depth, and ten foot over, or of what dimensions you think will suffice to furnish you with store: Let one of the sides or edges be made so sloping as to receive a Cart or Wheelbarrow to load and unload easily; let the bottom and sides also be so well pav'd, or laid with a bed of small *Chalk*, *Clay*, or the like, that it may be capable of retaining water like a Cistern: If to this you can commodiously direct any channels or gutters from your *Stable*, and other sinks about the house, it will be much the better. The *Pit* thus prepar'd, and under covert (for that I should have premis'd) so as at least the down-right rains may not fall upon it; cast into it first your *Stable soil* with the *Littier*, a foot or more thick, according to the depth of your *Pit*; upon this lay a bed of *fine Mold*, on that another bed of *Cider Marc*, *rotten fruit*, and *Garden offall*; on this a couch of *Pigeons* and *Poultry-dung*, with more *littier*; then a stratum of *Sheeps-dung*, a layer of *Earth* again, then *Neats-dung*; lastly, *Asbes*, *Soot*, *Fern*, (a moist and a dry) bottom of *Wood-shack*, *Saw-dust*, dry scowrings of *Ponds* and *Ditches*, with all other ingredients, as you happen to amass them, till the *Cistern* be full and heaped up; upon all this cast plentiful *water* from time to time, which if you can have out of some *Pond* where *Cattel* use to drink and cool themselves in, it will be excellent: At the expiration of two years you may confidently open your *magazine*, and separate the Layers as they rise, to cast them into other small *Pits* or receptacles made a little concave to receive them; where you may stir, air, mingle and work them in with fresh *Mold*, or one with the other, as you find cause, till they become comparatively sweet and agreeable to the scent: Lastly, you may pass them through a *screen* made of *lathes* plac'd at moderate intervals, and with the liquor remaining in your great *Cistern* sprinkle the several *Composts*, and make them up for use, casting the coarse remaining stuff, which would not pass the *riddle*, into the *Cistern* again for farther mortification, and so keep your *Pit* fill'd with fresh materials from time to time after the same method.

There are some who advise us to suffer your mixture to remain till it be quite dry, after it is thus refin'd, and then being beaten to dust, to strew it upon the ground. And indeed this seems in *Pliny's* time to have been the Custom; nor do I contradict it; provided you could water it, or were sure of a shower before the *sun* had drank too deeply of the spirit and vigour of it, which, reduc'd in this manner, it does easily part withal.

Now the Reason of our thus treating *Compost* of various soils and substances, is not only to *dulcify*, *sweeten*, and free them from the noxious qualities they otherwise retain, and consequently impart,



part, apply'd, as usually we find them, crude, indigested and unactive; but for being immoderately hot and burning, or else rank, and apter to ingender *vermine*, *weeds* and *fungous* excrescences, than to produce wholesome *Plants*, *Fruits* and *Roots* fit for the Table, and grateful to the Palate; for which effect, it should be thoroughly concocted, air'd, of a scent agreeable, and reduc'd to the next disposition of a sweet and natural *Earth*, short and tractable, yet not so macerated as to lose any of its virtue. • The proper season therefore for this work, is the beginning of the Autumnal *Equinox*, and *wind* westerly, both to prepare and lay it on your Land; that, whether it be of wet or dry consistence, it may have a gentle soaking into the *Earth*. As for fresh *Dungs*, such as *Sheep* make when they are folded, it is good advice to cover it with Mold as soon as possible, before the *sun* have over-dry'd it, for the Reasons before hinted; and by this early application you will find all that is stiff and yet any ways contumacious, subdu'd, and perfectly prepar'd before you turn it in. If you would meliorate Ground for *Fruit-trees*, *Roots* and *Esculents* of the *Orchards* and *Olitory Garden*, be cautious, that the hotter *Dungs* approach not immediately to their stems or roots, without such a circumposition of natural Mold as we have commended. But this is a note for such as think fit to use the soil *steaming* as it comes from the heap; but if it be prepar'd as we have shew'd, there is no danger even of immediate contact: And the same is to be observ'd in *Ab-laqueation*, where we find cause to bare the Roots of Trees, and expose them to the air, for fresh influence, or to abate exuberances; and that the cavity be not fill'd all at once (when we conceive the Roots have been sufficiently air'd) but gradually from month to month, as from *October* till the beginning of *March*; and upon other occasions, leaving the surface rough, rather than too *compt*, and exquisitely trim'd, if only you dig your Ground; which once in two or three years, four or five, (as you perceive your Trees to require Culture,) is advisable, and then to mingle the *Earth* with a thorow soiling, and refresh it with the impregnate water of your *Cistern*, will exceedingly recover a worn-out Plantation. This *Irrigation* may also be yearly given to the Roots of your *Fruit-trees* about *June* and *July*; and the spreading of a little good Soil upon the surface, and rough chopping it in with the spade before winter, is good husbandry, to wash in amongst the Roots, and to draw them upwards, the shallow running of which is of so great importance.

And thus having shew'd how to prepare, ripen, separate and apply the several *Composts* (which for distinction sake we call the *dry mixture*;) I am next to describe the *liquid* in many particulars, not much differing from the former Proceſs.

Twixt East and North erect a *Pergola* or *Shed*, so contriv'd with a cover, as to exclude or admit the *rain*, *snows* and weather at pleasure; sink a *Pit* for the *Cistern* as you did the former under it; cast into it all the *acid* Plants, bitter and rank *weeds* that come in your way, and grow in the neglected corners of your grounds, such

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such as *Esula*, *Hemlock*, *Docks*, *Thistles*, *Fumary*, *Tabaco-stalks*, *Wormwood*, *Cabbage-leaves* and *stalks*, *Aconites*, the leaves, trash, and offal, such as Cattel will not touch; to these add *Pigeons* and *Poultry dung*, with their *Quills* and *Feathers*; any sort of *Ashes*, *Soot*, *Hogs-hair*, *Horn*, *hard bones*, such as the *dogs* have gnawn; also *Urine*, *Blood*, *Garbage*, *Pickle*, *Brine*, *Sea-water*, (if conveniently to be had,) otherwise Pond-water, to sprinkle it with, and keep it moist to accelerate putrefaction; but when all is well consumed, forbear the pouring on of insipid liquors, and thus leave it till it be dry; then air, mingle and work your *Composts* as you were directed above, or boil it into *Peter*, casting what you find not well digested into the *Cistern* again for another year, and with a little addition, it will give you half the quantity of the former, and, provided that you supply the *Magazine*, a continu'd and farther increase. Indeed this *Salt* and *Compost* is not immediately fit for use, till it be well dulcified and purg'd from its over acrimony, therefore mix it well with your *Mold*, and dilute it as you see cause. The *Receipt* is set down by old *Glauber* for the effecting of wonderful *Vegetation*, by the assistance of certain *Circulatory Vessels* to prepare the *Oylie succus*, and pinguid Juice, which that Author teaches in his *Miraculum Mundi*, to extract not only out of these Materials, but out of *Turf*, *Wood* and *Stone* it self, by calcining and burning them in close, and reverberating furnaces, to which a *Tube*, adapted near the bottom, may convey the spirits into a *Recipient*, as he describes the Process. I mention this the rather, for the real effects which I have been told of this *Menstrue* from very good Testimony: And doubtless he who were skill'd to extract it in quantity (and to dulcifie, and qualifie it for use,) a true *spirituous Nitre* may do abundantly more, in the way of the improvements we have celebrated, with a small quantity, than with whole loads, nay, hundreds of loads of the best and richest *dry Composts* which he can devise to make. But besides this, any house of *Ordure*, or rancid mold, strong *salts*, *winous liquors*, *Urine*, *Ashes*, *Dust*, *shovelings* of the *kennel* and streets, &c. kept dry, and cover'd for three or four years, will be converted into *Peter*, without half this trouble; especially if you mingle it with the dung of *Pigeons*, *Poultry*, and other *salacious Fowl* which feed on *Corn*: Or those who would not be at the charge of distilling for these advantages, may make experiment of the so famous *Muck-water*, not long since cry'd up for the doing wonders in the field: Throw of the shortest and best *Marle* into your *Cistern*, exceedingly comminute and broken, which you may do with an iron *Rake*, or like Instrument, till the *liquor* become very thick; cast on this the dung of *Fowl*, *Conies*, *Sheep*, &c. frequently stirring it; to this add the soil of *Horses* and *Cows*, *Grains*, *Lees of Wine*, *Ale*, *Beer*, any sort of beverage, *broths*, *brine*, *fatty* and *greasy stuff* of the *Kitchen*; then cast in a quantity of *Lime*, or melting *Chalk*, of which there is a sort very unctuous; also *blood*, *urine*, &c. mixed with the water, and with this sprinkle your Ground at seasonable times, and when you have almost exhausted the *Cistern* of the liquid, mingle

gle the residue with the grosser *Compost* of your *Stable* and *Cow-house*, and with layers of *Earth*, *Sand*, *Lime*, S. S. S. frequently moistned with uncrude water, the taking up of which you may much facilitate, by sinking a *Tub* or *Vessel* near the corner of the *Cistern*, and piercing it with large holes at the bottom and sides, by which means you may take it out so clean as to make use of it through a great *Syringe* or watering Engine, such as being us'd to extinguish fire, will exalt and let it fall by showers on the Ground, and is much the more natural way of irrigation, and dispatches the work.

This *Liquor* has the reputation also for insuccation of *Corn*, and other Grain, to which some add a fine sifting of *Lime-dust* on it; and when that is dry, to repeat it with new infusions and siftings : But

There is yet a shorter *Process*, namely, the watering with *Fish-mongers-wash*, impregnated with the sweepings of *Ships* and *Vessels* trading for *salt*, adding to it the blood of the Slaughter-house, with *Lime*, as above ; but this is also much too fierce for any present use, till it be perfectly diluted, which is a caution indispensably necessary, when ever you would apply such powerful affusions, lest it destroy and burn up, instead of curing and enriching. Another take as follows :

*Rain-water* of the *Equinox*, q. s. boil'd with store of *Neats dung*; till it be very strong of it, dissolve one pound of *Salt-Peter* in every pottle of water ; whilst this is a little tepid, macerate your *Seeds* for twenty four hours, dry them gently, rather with a cloth than by the fire ; sow in the barrenest *Earth*, or water Fruit-trees with it, for prodigious effects. Or thus :

Take two quarts of the same water, *Neats-dung*, as before, boil'd to the consumption of half, strain it, casting into the percolation two handfuls of *Bay-salt*, and of *Salt-Peter ana*. Another :

Take *Rain-water*, which has stood till putrified, add to it *Neats*, *Pigeon*, or *Sheeps-dung*, expose it for *Insolation* a week or ten days, then pass it through a course strainer, infuse more of the same soil, and let it stand in the *sun* a week longer, strain it a second time, add to it *Common salt*, and a little *Oxes Gall*, &c. Another :

Take *quick Lime*, *Sheeps dung* at discretion, put into *Rain-water* four fingers eminent ; to ten pints of this *Liquor*, add one of *Aqua-vitæ*, macerate your *Seeds*, or water with it any lean *Earth*, where you would plant, for wonderful effects.

Infuse three pound of the best *Indian Niter* in fifteen *Gallons* of water, irrigate your barren Mould ; 'twas successfully try'd amongst *Tulips* and *Bulbs*, where the *Earth* should by no means (as we have said) be forc'd by *Composts*. But a gentler than either, is,

A dilution of *Milk* with *Rain-water*, sprinkl'd upon unsleckt *Lime*, first sifted on your beds, and so after every watering the *Lime* repeated.

These, with divers more which I might superadd, not taken and transcrib'd out of *Common Receipt-Books*, and such as pretend to *Secrets*, but most of them experimented, I thought fit to mention ;



that upon repetition of Tryals, the curious might satisfy themselves, and as they have opportunity improve them, whilst perhaps, as to *irrigations*, less exalted liquors were more natural. And what if Essays were made of Liquors *per Lixivium*, the Plant reduc'd to ashes; might it not be more conatural, since we find by more frequent tryal, that the burning of *stubble* before the Rains descend on it, impregnates ground by the dissolution of its spermatic salts? I only name the naked *Phlegm* of Plants distill'd either to use alone, or extract the former salt; but I say, I only mention them for the curious to examine, and *ex abundanti*. For certainly (to return a little, and speak freely my thoughts concerning them) most exalted *Menstrues*, and (as they dignify them with a great name) *Essentiated Spirits*; I say, all hasty motions, and extraordinary *fermentations*, though indeed they may possibly give suddain rise, and seemingly exalt the present vigour of *Plants*, are as pernicious to them as *Brandy*, and hot-waters are to Men; and therefore wherever these *ardent* Spirits are apply'd, they should be pour'd at convenient distances from any part of the *Plant*, that the virtue may be convey'd through some better qualified medium. But when all is done, waters, moderately impregnated and imbodyed with honest *Composts*, and set in the *Sun*, are more safe, and I think more natural: For, as the Learn'd Dr. *Sharrok* truly affirms, *Water* is, of its own Constitution alone, a soil to *Vegetables*, not only as the most genuine *Vehicle* of the riches which it imparts to *Plants*, through the several strainers, and by means of which all change and melioration is effected; but for that it is of all other substances best dispos'd for ingression, to insinuate into, and fertilize the *Earth*, which is the reason that floated and *irriguous* grounds are so pregnant. Besides, it is of all that pretend to it, nearest of *blood* (as I may say) to the whole *Vegetable* Family: For to assert with any confidence, what part of the *meer Earth* passes into their composition; or whether it serve (as we touch'd before) only for stability, or as a *Womb* and receptacle to their *Seeds* and *Eggs* (for so we are taught to call the *Seeds* of *Plants*.) I shall not undertake to discuss. Every body has heard of *Van-Helmont's* *Asb-tree*; and may without much difficulty repeat what has been experimented by exquisitely weighing the *Mold* before, and after a *Gourd* is planted in it, and till it be grown to bulk and full maturity, fed with water only; how much *Ignor* is insum'd, and how little of the *Earth* consum'd, to make some conjecture; though I do not yet conceive the *Earth* to be altogether so dull and unactive, as to afford no other aid to the Generation of what she bears; the diversity of soils being (as we have shew'd in this Discourse) so infinitely various, and the difference of invisible infusions so beyond our *Arithmetic*. But if we give *Liquids* predominion, and at least the *Masculine* preference, be they *Salts*, or *Spirits* (that is, nitrous Spirits) convey'd into her bosome how they will; sure we are, that *Water* and *Vegetables* are much nearer of alliance, than either *Water* or *Air* are with the *Earth* and *Mold*. But neither do I here also by any means exclude the *Air*, nor deny its perpetual Commerce,

merce; and benign influences, charg'd as it comes with those pregnant and subtil particles, which insinuating into the *Earths* more steady, and less *volatile Salts*, and both together invading the *Sulphur*, (and freeing them from whatsoever they find contumacious) that intestine *fermentation* is begun and promoted, which derives life, and growth, and motion to all that she produces. That by the *Air*, the most *effete* and *elixiviated* Mold comes to be repair'd, and is qualified to attract the prolific *nitrous* spirits, (which not only disposes the *Earth* to this impregnating *magnetism*, but converts her more unactive and *fixed salts* into quite another genius and nature,) the Learned Doctor *Mayow* has ingeniously made out; and all this by a naked exposure to the *Air* alone, without which it produces nothing: Nor can *Plants* (totally excluded from the *Air*) live, or so much as erect themselves to any thriving purpose, as being depriv'd of that *breath* and vital *Balm*, which no less contributes to their growth and nourishment, than does the *Earth* it self with all our assistances: For that *Plants* do more than obscurely *respire*, and exercise a kind of *Peristaltic* motion, I little doubt, from the wonderful and conspicuous attraction, and emission, which some of them discover; particularly, the *Aloes*, and other *Sedums*, and such as consisting of less cold and viscous parts, send forth their *Aromatic* wafts at considerable distance.

*Transac. Medico-Phys.*

Besides, we find that *Air* is nearer of kin and affinity to *Water*, than water is to *Plants*; unless I should affirm, that *Air* it self were but a thinner *water*; for how else are those *Vines*, and other Trees of prodigious growth, maintained amongst the barren Rocks, and thirsty *Pumices*, where Rains but seldom fall? if not from this *rorid* *Air*. Not to insist again, that perhaps even these Rocks themselves may once have sprung from liquid Parents; and how little, even such as are expos'd to continual showers in other *Climates*, abate of their magnitude, since we rather find them to increase; and that also the *Fruits* and *Juices* of *Vegetables* seem to be but the *concretion* of better concocted *Water*, and may not only be converted into *lignous* and woody substance (as the Learned Doctor *Beale* has somewhere instanc'd in a Discourse presented to You, and Recorded in the *Public Transactions*) but is apt enough to *petrify* and become arrant Stone.

Whatever then it be which the *Earth* contributes, or whether it contain universally a *Seminal* virtue, so specified by the *Air*, *Influences*, and *Genius* of the *Clime*, as to make that a *Cinnamon*-Tree in *Ceylon*, which is but a *Bay* in *England*, is past my skill to determine; but 'tis to be observed with no little wonder, what *Monsieur Bernier* in his History of the *Empire* of the *Mogol* affirms to us of a mountain there, which being on one side of it intolerably hot, produces *Indian Plants*; and on the other, as intemperately cold, *European* and *Vulgar*. Not here to pass without notice at least, what even the most exhausted Mold will (to all appearance) produce spontaneously, when once it has been well expos'd to the *Air*, and heavenly influences; if what springs up be

not possibly from some *volatil* rudiments and seeds, transported by *winds*, higher than we usually place our Experiments, unless we could fix them upon *Olympus* top: But *Porta* tells us with more confidence that he took *Earth* from a most profound and dry place, and expos'd it on such an eminence, as to be out of reach even of the *winds*; but it produc'd, it seems, only such *Plants* as grew about *Naples*, and therefore may be suspected.

To return then again from this digression, and pursue our *Liquids*; where there is good *Water*, there is commonly good *Earth*, and *vice versa*; because it bridles and tempers the *Salts*, abates the *acidity* and fierceness of *Spirits*, and imparts that useful ligature and connexion to the Mold, without which it were of no use for *Vegetation*. In the mean time, of all *Waters*, that which descends from *Heaven*, we find to be the richest, and properest in our work, as having been already *meteoriz'd*, and circulated in that great *digestory*, enrich'd and impregnated with *spiritual* influences from above at those propitious Seasons; whence that saying, *Annus fructificat, non Tellus*, has just Title to a Truth we every years Revolution behold and admire, when the sweet *Dews* of *Spring* and *Autumn* (hitherto constipated by *cold*, or consumed with too much *heat*) begin to be loosened, or moderately condens'd, by the more benign temper of the *Air*, impregnating the prepared *Earth* to receive the *Nitrous* Spirits, descending with their baulmy pearls, yet with such difference of more or less benign, (as vapours haply, which the *Earth* sends up, may be sometimes qualified,) that nothing is more uncertain. And this we easily observe from the Labours of the Industrious *Bee*, and her precious *Elixir*, when for some whole months she gathers little, and at other times stives her waxen *City* with the harvest of a few propitious days. But I am gone too far, and therefore now shall set down only a few directions concerning *watering*, and so dismiss the Subject and your patience.

1. It is not good to water new-sown *Seeds* immediately, as frequently we do, and which commonly bursts them; but to let them remain eight and forty hours in their beds, till they be a little glutted with the natural juice of the *Earth*: But then neither must you so neglect their *Beds*, as to become totally dry; for if once the *Seeds* crack through heat, their little *Souls* exhale; therefore till they peep, you must ever keep them in a just temper for moisture, and be sure to purge them of predacious *Weeds* betimes: In a word, these *irrigations* are to be conducted according to the quality of the *Seeds*, those of hard *integuments* requiring more plentiful refreshings.

2. Never give much *water* at one time; for the surface of the *Earth* will often seem very dry, when 'tis wet enough beneath; and then the *Fibers* rot about *Autumn*, especially in *Pots* and *Cases*, winter'd in the *Green-house*: To be the more secure, we have already caution'd *Gardners* to keep their bottoms hollow, that nothing stagnate and fix too long; which should be but transitory. If such curiosities strike no root by *September*, the leaves desert them  
certainly



certainly at *Spring*: The reason is want of *Air*, not moisture. Therefore in all intervals of severer *Frosts*, and rigorous winter-weather, be sparing of refreshings, and unless you perceive their leaves to crumple up, and fall, (which is their language for *Drink*,) give them as sparingly as you can. Indeed, during the *Summer*, and when they are expos'd, they require almost perpetual irrigation, and that the liquor be well impregnated with proper Compost: It is ever advisable to *Water* whilst the Ground is a little moist, and not totally dry, especially during the growing seasons, for it *stunts* the *Plant*; and intercepts its progress. But in hard *Frosts*, or *Foggy* Seasons, watering your housed Plants indangers them by mustiness, and a certain *Mildew* which they contract. On the other hand

Applications too dry create an intemperate thirstiness, and then they drink unmeasurably, and fall into *Dropsies*, *Jannities*, *Fevers*, swell, languish and rot; and if the liquor prove too crude (as commonly it does, if taken from running, and hungry fountains) it extinguishes the natural heat, and obstructs the Pores; and therefore when ever you are constrain'd to make use of such drink, expose it first to the warm *sun* for better concoction, infusing *Sheep*, *Pigeons*, or *Neats-dung*, to give it body: But though *Spring-water* be so bad, slow running *River* is often very good, and *Pond-water* excellent, so it be sweet; but all stinking pools, mineral and bituminous waters, are not for our use; and often good *Air* is as needful as good water; *Worms*, *Mouldiness*, *Cankers*, *Consumptions* and other *Diseases*, being the usual and fatal consequence of these vices.

If you be to plant in fresh and new broken-up *Earth*, and that the season or mold be too dry, 'tis to be water'd; but then give it a competent sprinkling, or lifting of dry and fine mold upon what you have refresh'd, and then beating it a little close with the back of your *spade*, plant it successfully; for this you will find to be much better, than to water it after you have planted (as the custom is) and as you may observe in setting *Violets*, *Auricula's*, *Primroses*, and other *Capillaries*, planted in beds or bordures, and then dash'd with a flood of water, which, so soon as the *sun* has look'd upon; resign and lose their figures, scorch and shrivel up: Here therefore let *Gardeners* be cautious how they expose their *Exotics* and choicer *Case-Plants*, which many times having born the *Winter* bravely in the *Conservatory*, dwindle away, and are lost on the sudden; by being too suddenly plac'd in the Eye of the *sun* in *March*, (or later) when they most of all require the protection of a thin *Hedge*, or *Canvas Curtain*, to break his scorching darts, as well as defend them from our then too constant and rigorous *Ete-sians*. Lastly,

For the *Season* likewise of this work, let it be towards the *Evening* in hot and *Summer* days, for the reason immediately assign'd; for the moisture being in a short time drunk-up, deserts the *Plant* to the burning *Planet*; and hence it is, that *Summer mists* are so noxious, and *Meridian watrings*; and therefore the best expedient

pedient is, upon such exigencies, to pour your refreshings rather all over the *Area* on which your *Cases* of choice and rare shrubs are plac'd, and among the Allees and Paths between your *Beds* of *Flowers*, for the raising artificial *Dews*, (by which is unfolded no common secret;) or water them *per lingulam*, and *guttatim*, than either with the Pot or Bucket: And after this manner, if at other seasons they stand in need of heat and comfort of warmth, by strewing *sand* or *Cinders* on the same intervals, the reflection will recreate them, upon allemissions of the Sun-beams.

As for grosser *Plantations*, and Trees of old *Orchard-Fruits*, moderation is also to be observed, and not to dash on such a quantity near the *stem* and *body*; but first with the *spade* to loosen the *Earth* about them, especially towards the extremities of the tenderest Roots, which generally sprout at the ends of the most woody, whose mouths are shut with tougher bark. These therefore may be cut sloping to quicken them a little, and make them strike fresh *fibers*; especially, if some rich, and tempting mold be seasonably apply'd: For Trees will (as we shew'd) with very little *Earth* to cover them, take fast root, (provided you stablish them against impetuous winds, shocks and accidents of force,) and thrive exceedingly with this refreshment.

Some make pretty large *holes* with an *Iron-Crow*, or (which is better) a pointed *stake*, and pour the *liquor* in at those overtures; but besides, that by this means they wound the roots, (which *gangeres*, and sometimes kills the Tree,) if the holes be not fill'd, the *Air* and Moisture moldies them: So as, when all is summ'd together, there's nothing comparable to frequent *stirring* up the Ground, opening the dry clod, and *watring* upon that; and if you lay any *fearn-brakes* or other trash about them, capp'd with a little *Earth*, to entertain the moisture, and skreen it from the heat, let it not be wadded so close, or suffer'd to lie so long, as to contract any mustiness, but rather loose and easie, that the *Air* may have free intercourse, and to break the more intense ardours of the scorching Sun-beams.

Thus I have exercis'd Your *Lordships* and these noble *Gentlemen's* Patience with a dull Discourse of *Earth*, *Mold*, and *Soil*; but, I trust, not altogether without some *Fruit*; or, at least, not improperly *pro hic & nunc*, as the Subject has Relation to what has so lately been produc'd, and with happy event made out, by those Learned Persons, who have entertain'd this illustrious *Society* with the *Anatomy* of *Plants*.

POMONA,

POMONA,  
OR AN  
APPENDIX  
CONCERNING  
FRUIT-TREES,  
In relation to  
CIDER,

The *Making*, and several ways of *Ordering* it.

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The Third Edition with Addition.

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Virg. Eclog. ix.

— *Carpent tua Poma nepotes.*

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L O N D O N,

Printed for *John Martyn*, Printer to the *Royal Society*.  
M DC LXXVIII.



ROMA

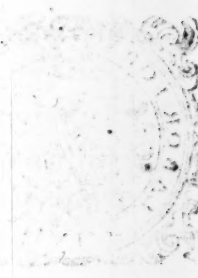
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Printed for the

TO THE  
 RIGHT HONOURABLE  
**THOMAS**  
 Earl of *S O U T H A M P T O N*,  
 Lord HIGH TREASURER  
 O F  
**ENGLAND, &c.**

*My Lord,*



F great *Examples* did not support it, the dignity and greatness of your *Person* would soon have given cheque to this presumption: But since *Emperours* and *Kings* have not only gratefully accepted *Works* of this nature, but honor'd them likewise with their own sacred hands, that *Name* of yours, (which ought indeed never to appear but on Instruments of State and fronts of *Marble*, consecrating your *Wisdom* and *Vertues* to *Eternity*) will be no way lessen'd by giving Patronage to these appendent *Rusticities*. It is from the Protection and Cherishment of such as your *Lordship* is, that these *Endeavours* of ours may hope one day to succeed and be prosperous. The noblest and most useful Structures have laid their Foundations in the *Earth*: if that prove firm *here* ( and firm I pronounce it to be, if your *Lordship* favour it ) We shall go on and flourish. I speak now in relation to the *Royal Society*, not my self, who am but a *Servant* of it only and a *Pioner* in the *Works*. But be its fate what it will, Your *Lordship*, who is a *Builder*,  
 X x and

*The Epistle Dedicatory.*

and a lover of all *Magnificences*, cannot be displeas'd at these agreeable *Accessories* of *Planting*, and of *Gard'ning*. But, my *Lord*, I pretend by it yet some farther service to the *State* than that of meerly *profit*, if in contributing to your *divertisement* I provide for the *Publick health*, which is so precious and necessary to it in your excellent *Person*. Vouchsafe *P O M O N A* your *Lordships* hand to kiss, and the humble *Presenter* of these *Papers* the honour of being esteem'd,

*My Lord,*

Your most humble,

and most obedient

*Servant,*

J. EVELYN.

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POMONA,

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# P O M O N A,

Or An Appendix Concerning

## F R U I T - T R E E S,

In relation to

# C I D E R:

The Making, and several ways of Ordering it.

### THE PREFACE.



**S**INCE *Quercus* was the Proverb; and it is now time AN. Sc. 1. in eos, qui re-  
lictis victus for-  
dido, ad ele-  
gantiorum  
lautiorumq;  
digrediuntur. to walk out of the Woods into the Fields a little, and to consider what Advancement may be there likewise made by the planting of FRUIT-TREES. For after the Earth is duly cultivated, and pregnant with a Crop of Grain; it is only by the Furniture of such Trees as bear Fruit, that it becomes capable of any farther Improvement. If then by discovering how this may best be effected, I can but raise a worthy emulation in our Country-men; this addition of noble Ornament, as well as of Wealth and Pleasure, Food and Wine, may (I presume) obtain some grateful admittance amongst all Promoters of hortulan Industry.

But before I proceed, I must, and do ingenuously acknowledge, that I present my Reader here with very little of my own, save the pains of collecting and digesting a few dispers'd Notes (but such as are to me exceedingly precious) which I have receiv'd; some from worthy, and most experienc'd \* Friends of mine; and others, from the well-furnish'd Registers, and Cimelia of the ROYAL SOCIETY. Especially, those Aphorisms, and Treatises relating to the History of Cider, which by express commands they have been pleased to injoin I should publish with my Sylva.

It is little more than an Age, since Hops (rather a Medical, than Alimental Vegetable) transmuted our wholesome Ale into Beer; which doubtless much altered our Constitutions: That one Ingredient (by some not unworthily suspected) preserving Drink indeed, and so by custom made agreeable; yet repaying the pleasure with tormenting Diseases, and a shorter life, may deserved-

## THE PREFACE.

ly abate our fondness to it; especially, if with this be consider'd likewise, the casualties in planting it, as seldom succeeding more than once in three years; yet requiring constant charge and culture; Besides that it is none of the least devourers of young Timber.

And what if a like care, or indeed one quarter of it, were (for the future) converted to the propagation of Fruit-trees, in all parts of this Nation, as it is already in some, for the benefit of Cider? (one Shire alone within twenty miles compass, making no less, yearly, than Fifty thousand Hogheads) the commutation would (I persuade my self) rob us of no great Advantage; but present us with one of the most delicious and wholesome Beverages in the World.

It was by the plain Industry of one Harris (a Fruiterer to King Henry the Eighth) that the Fields, and Environs of about thirty Towns, in Kent only, were planted with Fruit, to the universal benefit, and general Improvement of that County to this day; as by the noble example of my Lord Scudamor, and of some other publick-spirited Gentlemen in those parts, all Herefordshire is become, in a manner, but one intire Orchard: And when his Majesty shall once be pleas'd, to command the Planting but of some Acres, for the best Cider-fruit, at every of his Royal Mansions, amongst other of his most laudable Magnificences; Noblemen, wealthy Purchasers, and Citizens will (doubtless) follow the Example, till the preference of Cider (wholesome, and more natural Drinks) do quite vanquish Hopps, and banish all other Drogues of that nature.

But this Improvement (say some) would be generally obstructed by the Tenant, and High-shoon-men, who are all for the present profit; their expectations seldom holding out above a year or two at most.

To this 'tis answer'd; That therefore should the Lord of the Mannour not only encourage the Work by his own Example, and by the Applause of such Tenants as can be courted to delight in these kinds of Improvements; but should also oblige them by Covenants to plant certain Proportions of them, and to preserve them being planted.

To fortifie this profitable Design, It were farther to be desir'd, that (if already there be not effectual provision for it, which wants only due execution and quickning) an Act of Parliament might be procur'd for the Setting but of two, or three Trees in every Acre of Land that shall hereafter be enclosed, under the Forfeiture of Six-pence per Tree, for some publick and charitable Work, to be levy'd on the Defaulters. To what an innumerable multitude would this, in few years, insensibly mount; affording infinite proportions, and variety of Fruit throughout the Nation, which now takes a Potion for a refreshment, and drinks its very Bread-corn!

I have seen a Calculation of twenty Fruit-trees to every Five-pounds of yearly Rent; forty to Ten; sixty to Fifteen; eighty to Twenty;

Twenty; and so according to the proportion. Had all our Commons, and Wast-lands one Fruit-tree but at every hundred foot distance, planted, and fenc'd at the publick charge, for the benefit of the Poor, whatever might dye and miscarry, enough would escape able to maintain a Stock, which would afford them a most incredible relief. And the Hedg-rows, and the Champion-grounds, Land-divisions, Mounds, and Head-lands (where the Plough not coming, 'tis ever abandon'd to Weeds and Briars) would add yet considerably to these Advantages, without detriment to any man.

As touching the Species, if much have been said to the preference of the Red-strake before other Cider-Apples, this is to be added; That as the best Vines, of richest liquor, and greatest burthen, do not spend much in wood and unprofitable branches; so nor does this Tree: for though other Cider may seem more pleasant (since we decline to give Judgment of what is unknown to us) we yet attain our purpose, if This shall appear best to reward the Planter, of any in present practice; especially, for the generality; because it will fit the most parts which are addicted to these Liquors, but miss of the right kinds, and prove the most secure from external injuries and Invaders. But to give Cider its true estimation; besides that it costs no Fuel to Brew it, and that the labour is but once a year; it is good of a Thousand kinds, proper for the Cure of many Diseases, a kind Vehicle for any sanative Vegetable, or other Medical ingredients; That of Pepins a Specific for the Consumption; and generally, all strong, and pleasant Cider excites and cleanses the Stomach, strengthens Digestion, and Infallibly frees the Kidnies and Bladder from breeding the Gravel and Stone; especially if it be of the genuine Irchin-field Red-Strake; not omitting how excellently it holds out good many years to Improvement if full-body'd, and strong even in the largest and most capacious Vessels; so as when for Ordinary Drink our Citizens, and honest Country-men shall come to drink it moderately diluted (as now they do six-shilling Beer in London and other places) they will find it marvellously conduce to health; and labouring people, where it is so drank, affirm, that they are more strengthened for hard Work by such Cider, than by very best Beer.

But not to refine any farther upon the rare effects of Cider, which is above all the most eminent, soberly to exhilarate the Spirits of us Hypochondriacal Islanders, and by a specific quality to chase away that unsociable Spleen, without excess; we must not forget that the very Blossom of the Fruit perfumes, and purifies the ambient Air, which (as Dr. Beal well observes in his Herefordshire Orchards) is conceiv'd conduces so much to the constant Health and Longevity, for which that Country has been always celebrated, fencing their Habitations and sweet Recesses from Winds, and Winter-invasions, the heat of the Sun, and his unsufferable darts: And if (saith he) we may acknowledge grateful trifles, for that they harbour a constant Aviary of sweet Singers, which are here retain'd without the charge of Italian wires: To which I cannot

Herefordsh.  
Orch. p. 8.



*cannot but add his following option, That if at any time we are in danger of being hindered from Trade in Foreign Countries, our English indignation may scorn to feed at their Tables, to drink of their Liquors, or otherwise to borrow or buy of Them, or of any their Confederates, so long as our Native Soyl does supply us with such excellent Necessaries; and whether this be not prophetically seasonable in the present conjuncture I leave wise men to consider.*

*Nor do we produce these Instances to redeem the Liquor from the superstition, prejudice, and opinions of those Men who so much magnifie the juice of the Grape above it: But we will here add some Experiments from undeniable success (in spite of Vintners, and Bawds to mens Palates) were they sufficient to convince us, and reclaim the vitiated; or that it were possible to dispute of the pleasantness, riches, and precedency of Drinks and Diets, and so to provide for fit, competent, and impartial Judges; when by Nature, Nation, or Climate (as well as by Custom and Education) we differ in those Extreems.*

*Most parts of Africa and Asia prefer Coffee before our Noblest Liquors; India, the Roots and Plants before our best Cook'd Venison; Almost all the World crude water, before our Country Ale and Beer; and we English being generally more for insipid, luscious, or gross Diet, than for the spicy, poignant, oylie, and highly relish'd, (witness our universal hatred of Oyls, French-wine, or Rhenish without Sugar; our doating on Currans, Figgs, Plum-pottage, Pies, Pudding, Cake, &c.) renders yet the difficulty more arduous. But to make good the Experiment.*

*About thirty years since one Mr. Taylor (a person well known in Hereford-shire) challeng'd a London-Vintner (finding him in the Country) That he would produce a Cider which should excel his best Spanish or French-wine: The Wager being deposited, He brings in a good Red strake to a private House: On that Scene, all the Vintner could call to be Judges pronounce against his Wine; Nor would any man there drink French-wine (without the help of Sugar) nor endure Sack for a full draught; and to those who were not accustomed to either, the more racy Canaries were no more agreeable than Malaga, too luscious for the repetition. But this Wager being lost, our Vintner renews his Chartel, upon these express terms, of Competent and Indifferent Arbitrators. The Gentleman agrees to the Articles; and thus again after mutual engagements it must be debated who were Competent Judges, and absolutely Indifferent. Mr. Taylor proposes Three, whereof the odd Number should by Vote determine: They must be of the fittest Ages too, or rather the fittest of all Ages, and such as were inur'd neither to Cider nor any Wine; and so it was agreed. The Judges convene; viz. A Youth of ten years old, a Man of thirty, and a Third of sixty; and by All these also our Vintner lost the Battel. But this is not enough; 'Tis assay'd again by Nine Judges, the Ternary thrice over; and there 'tis lost also: To this we could add another, even of the Cider of Ledbury (which is not yet the best of Hereford-shire) which, when an experienced London-Vintner had tasted, he wish'd*

wish'd had been Poyson; for that if it were known where he dwelt, it would utterly undo his Trade. And here I will conclude; for I think never was fairer Duel; nor can more be reasonably pretended to vindicate this Blessing of God, and our Native Liquor from their contempt, and to engage our Propagators of it.

To sum up all: If Health be more precious than Opinion, I wish our Admirers of Wines, to the prejudice of Cider, behold but the Cheat themselves; the Sophistications, Transformations Transmutations, Adulterations, Bastardizings, Brewings, Trickings, not to say, even Arlenical Compassings of the sophisticated God they adore; and that they had as true an Inspection into those Arcana Lucifera, which the Priests of his Temples (our Vintners in their Taverns) do practise; and then let them drink freely that will;  
 Ἀεὶσὸν μὲν ὕδαρ: — Give me good Cider.

*Tot veneficii  
 placere cogi-  
 tur, & mira-  
 mur noxium  
 esse Vinum?*  
 Plin.  
 As 'tis most  
 ingeniously  
 cited by Dr.  
 Charleton, in  
 his excellent  
 Discourse of  
 the Adultera-  
 tions of Wine,  
 entered into  
 the Register of  
 the Royal Soci-  
 ety; and (with  
 those other  
 most useful  
 Pieces sub-  
 joined) since  
 published, &c.  
 See Regist. Ro.  
 Society, Num. 2.  
 17. Decemb. 28.  
 Jan. 1662. pag.  
 67. 116. &c.

It is noted in our Aphorisms how much this Beverage was esteem'd by His late Majesty, and Court, and there referr'd to all the Gentry of the invironing Country, (no strangers to the best Wines) when for several Summers in the City of Hereford (so encompass'd with store of it, and brought thither without charge, or extraordinary subductions) it was sold for six-pence the Wine-Quart, not for the scarcity, but the excellency of it: And for the Red-strake, that it has been seen there hundreds of times (with vehement and engaged competition) compar'd with the Cider of other the most celebrated Fruit, when after a while of vapour, no man insisted for any other Liquor in comparison.

But it is from these Instances (may some say) when the World shall have multiplied Cider-Trees, that it will be time enough to give Instructions for the right Pressing and Preserving of the Liquor. The Objection is fair: But there are already more Persons better furnish'd with Fruit, than with Directions how to use it as they should; when in plentiful years so much Cider is impair'd by the ignorant handling, and becomes dead and sour, that many even surfeit with the Blessing; it being rarely seen in most Countries, that any remains good, to supply the defects of another year; and the Royal Society would prevent all this hazard by this free Anticipation. And yet when all this is said, we undertake not to divine what excellent Cider other soils may bear; nor do we positively extol the Red-strake farther than the bounds and confines of Herefordshire, for the Experiments we have produc'd; but because there are doubtless many such soils sparsedly throughout this Nation; why should it not incite our Industry to its utmost effort, and the commendable emulation of endeavouring to raise a yet kindlier Cider-fruit if it be possible, and which may prove in it self as good, and as agreeable to the Soil where we plant it? And certainly, much of this may fairly be expected, from the Trials, Culture, and Propagation of Kernel-fruits of innumerable sorts, and from hopeful Wildings, and the peculiarity of Grounds: I find that even in the West-Indies, at our Plantations of New England, one Gentleman in Connecticut Colony, made 500 Hogsheads of Cider in one year out of his own Orchard, and that though it be in great plenty a-

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## The P R E F A C E.

mong them, yet it is sold for ten Shillings the Hoghead.

*It now remains, that I should make some Apology for my self, to extenuate the tumultuary Method of the ensuing Periods. Indeed it was not intended for a quaint or elaborate piece of Art; nor is it the design of the Royal Society to accumulate Repetitions when they can be avoided; and therefore in an Argument so much beaten as is that of dressing the Seminary, Planting, and modes of Graffing, it has been with Industry avoided; such rude, and imperfect draughts being far better in their esteem (and according to my Lord Bacon's) than such as are adorn'd with more pomp, and ostentous circumstances, for a pretence to Perfection. The Time may come when the richness, and fullness of their Collections may worthily invite some more Industrious Person to accomplish that History of Agriculture, of which these Pieces (like the limbs of Hippolytus) are but scattered parts: And it is their greatest ambition for the Publique Good, to provide such Materials, as may serve to Raise, and Beautifie that most desirable Structure.*

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# POMONA.

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## CHAP. I.

### Of the Seminary.

**W**E had not the least intention to enlarge upon this *Title*, after we had well reflected on the many and accurate Directions which are already published, as well in our *French-Gardiner*, as in sundry other *Treatises* of that nature, had not a most worthy *Member* of the *Royal Society* (to whom we have infinite Obligations) furnished us with some things very particular and remarkable, in order to the improvement of our *Seminaries*, *Stocks*, &c. which are indeed the very *Basis* and *Foundation* of *Cider-Orchards*. It is from those precious *papers* of *his*, and of some *others* (whose Observations also have richly contributed to this *Enterprise*) that we shall chiefly entertain our *Planter* in most of the following Periods.

Dr. Beale of  
Yeovil in  
Somersetshire.

Whosoever expects from the *kernel* of a rich or peculiar *Apple* or *Pear* to raise *Fruit* of the *same kind*, is likely to find many obstructions and disappointments: For the *Wilding*, (*Crab* or *Pear*) *Pomus Sylvestris*, being at the best the natural product of the soundest *kernel* in the firmest land, and therefore the gust of the *Fruit* more strongly austere, fierce, and sharp, and also the *Fruit* less and more woody; and the pleasanter or plumper and larger *Apple* being the effect of some inteneration, which inclines to a kind of rebatement of the natural strength of the *Tree*; the best choice of *kernels* for *Stocks* indefinitely, (and on which we may graff what we please) should be from the soundest *Wilding*. For,

A *kernel* taken from any *graffed-Apple*, as *Pepin*, *Pear-main*, &c. does most naturally propend to the wildness of the *Stock* on which 'twas inserted, as being the natural mother of the *kernel*, which is the very heart of the *Apple*; and also from a more deep and secret *Reason*, to be hereafter unfolded.

*Apples* and *Pears* requiring rather a vulgar and ordinary *Field-land*, than a rich *Garden-mold*, (as has been often seen to succeed by frequent Observations) it has been found that *kernels* sowed in a very high *compost*, and rank earth, have produced (*large* indeed, but) *insipid* *Fruit*, hastily rotting on the *Trees*, before all the parts of it were mature, and disposing to *Cankers*. *Vid. Aphor. 33.*

And sometimes when they seemed in outward *figure* to bear the shape of *graffed Apples*, from whence the *kernels* came, yet the gust did utterly deceive, wanting that vivacity and pungent agreeableness.

If the *kernels* of natural *Apples* (or of *ungraffed Trees*) should produce the same, or some other variety of *Apples*, (as sometimes it succeeds) yet would this care be seldom *opera pretium*, and at best but a work of *Chance*, the disappointment falling out so often through the fickleness of the *Soil*: Or admit that the most proper and constant, yet would the very *dews* and *rain*, by various and mutable Seasons, and even by the *Air* it self, (which operates beyond vulgar perception, in the very changes as well of the *mold*, as of the *seeds* and *fruit*) create almost infinite alterations: And

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the choice having been in all places (apparently for some *thousands* of years) by propagating the most delicate of *Fruits* by the *Graffs*, 'tis almost a desperate task to attempt the raising of the *like*, or *better* Fruit from the rudiments of the *Kernel*.

Yet since our design of relieving the want of *Wine*, by a *Succedaneum* of *Cider*, (as lately improv'd) is a kind of *Modern Invention*, We may encourage and commend their patience and diligence who endeavour to raise several kinds of *Wildings* for the tryal of that excellent Liquor; especially since by late experience we have found, that *Wildings* are the more proper *Cider-Fruits*; some of them growing more speedily, bearing sooner, more constantly, and in greater abundance in leaner Land, much fuller of *juice*, and that more masculine, and of a more *Winy* vigour.

Thus the famous *Red-strake* of *Herefordshire* is a pure *Wilding*, and within the memory of some now living firnamed the *Scudamores Crab*, and then not much known save in the *Neighbourhood*, &c. Yet now it would be difficult to shew that *Red-strake* which grew from a *kernel* in that whole *Tract*, all being since become *grafted* Trees. Thus 'tis also believed, That the *Bromsbury Crab* (which carries the fame in some parts of *Glocestershire*) and many of the *White Musts*, and *Green Musts*, are originally *Savages*; as now in *Somersetshire* they have a generous *Cider* made of promiscuous *kernels*, or *ungrafted* Trees, which fills their confidence that no other *Cider* does exceed it; and 'tis indeed strong, and of a generous vigour.

Nor dare we positively deny, but that even the best of our *Table-fruit* came also originally from the *kernel*: For it is truly noted by my Lord *Bacon*, That the Fruit does generally obey the *Graff*, and yields very little to the *Stock*; yet some little it does.

The famous *Bezy d' Hery*, an excellent Musky *Pear*, was brought into the best *Orchards* of *France* from a *Forest* in *Bretany*, where it grew *wild*, and was but of late taken notice of.

But now to the deep *Reason* we lately threatned: We have by an Experiment found some near affinity between the *Kernel* of the *Apple* and the *heart* or interior of the *Stock*: For I saw (says Dr. *Beale*) an old rotten *Kernel-Tree* bearing a delicate *Summer-fruit*, yielding store of smooth *Cider*, ('tis call'd the *French-Kernel-Tree*, and is also a *Dwarf*, as is the *Red-strake*;) and examining divers *Kernels*, many years successively, of that hollow and decayed *Tree*, I found them always very small of growth, and empty, meer skins of *Kernels*, not unlike to the emasculated *Scrotum* of an *Eunuch*; another younger *Tree*, issuing from the sounder part of a *Root* of the same old *Tree*, had full and entire *Kernels*.

And from some such Observation might the production of *Berberies*, &c. without *Stones*, be happily attempted; an *Instrument* fitted to take out the *marrow* or *pith* of the *Branches*, (as the same Dr. *Beale* perform'd it;) for from the numerical *Bush* of that *Fruit* he found some *Branches* produce *Berberies* that had no *stones*, others which had; and in searching for the cause of the effect, perceived, that the *pith* or *heart* was taken from the *radicat*, or main *Branches*, as the other was full of *pith*, and consequently the fruit in perfection; of all which (he writes me word) he made several tryals on other fruit, but left the place before he could see the event. But he adds;

*These*

*These many years (almost twenty) I have yearly tri'd Kernels in Beds of clean Earth, Pots, and Pans, and by the very leaves (as they appear'd in first springing for one month) I could discern how far my Essays had civiliz'd 'em: The Wilder had shorter, stiffer, brown, or fox-colour'd leaves, The more ingenuous had more tender, more spreading leaves; and approaching the lighter verdure of the Berbery leaf when it first appears. He adds,*

*Some Apples are call'd Rose-Apples, Rosemary-Apples, Gillyflower-Apples, Orange-Apples, with several other adjuncts, denominating them, from what Reason I know not. But if we intended to try such infusions upon the Kernels (as should endeavour to alter their kinds) we should not approve of the bedabbling them with such infusions, (for over-moisture would rather enervate than strengthen them) but rather prepare the Earth the year before, with such insuccations, and then hinder it from producing any Weeds, till ready for the Kernels, and then in dewy times, and more frequently when our Climate were surcharg'd with rain, cover the Beds and Pots with the small leaves of Rosemary, Gillyflowers, or others odoriferous Blossoms, and repeat it often, to the end the dews may meteorize, and emit their finer Spirits, &c. Or if any shall please to be so liberal of their Salts and Calcinations of peculiar Virtues (though possibly the Essay may indanger their seeds) yet the mixture of such Salts finely reduc'd and strewed discreetly on their Beds, may be a more probable means, than those Liquid Infusions which have hitherto been so confidently boasted. For thus also we are in this Age of ours provided of more vigorous Ingredients for trials than were known to the Ancients. Finally,*

*From what has been deduc'd from the Wilding of several parts, it may manifestly appear, how much more congenial some soil is than other, to yield the best Cider-fruit from the Kernel; and the hazle ground, or quicker mold warm and light, much better than the more obstinate clay or rank earth, heavy, cold or wet: In hot Gravelly-grounds, where almost no sort of Fruit will grow, Pears will thrive; and a Friend of mine assures me, of One that clave a Rock, and filling it with a little good Earth, planted a Pear-tree therein, which prosper'd exceedingly; and at this time, in the Town not far from my dwelling, there is a Bonne Chrestienne Pear-tree plentifully bearing very goodly fruit which grows in a narrow Court pav'd with flint and pibbles, and unless a little in the morning, shaded from all the benign aspects. I add this, that none may go hence without encouragement.*



## C H A P. II.

## Of Stocks.

THE former thus establish'd, after all *humours* and *varieties* have been sufficiently wearied, we shall find the *Wilding* to be the hardiest and most proper *Stock* for the most delicate *Fruit* : This confirm'd by *Varro*, lib. 1. cap. 40. *In quamcumq; arborem inferas*, &c. and 'tis with reason : However they do in *Herefordshire*, both in practice, and opinion, limit this *Rule* ; and to preserve the gust of any delicate *Apple* (as of the *Pear-main*, *Quince-Apple*, *Stockin*, &c.) rather graff upon a *Gennet-Moyle* or *Cyddoddin-Stock*, (as there called) than a *Crab-Stock* ; but then indeed they conclude the Tree lasts not so long ; and 'tis observ'd, That *Apples* are better tasted from a clean, light land, &c. than from stiffer clay, or the more pinguid and luxurious soil, whence we may expect some assistance from the civility of the *Stock*, which is a kind of prepared *soil*, or foundation to the *Graff* ; even as our very *Transplantations* into better ground is likewise a kind of *Graffing*.

Thus in like manner our Master *Varro*, *loco citato* concerning *Pears* ; *Si in Pyrum Sylvaticam*, &c. The *Wild-stock* does enliven the dull and phlegmatic *Apple*, and the *Stock* of a *Gennet-Moyle* sweeten and improve an *Apple* that seems *over-tart*, as the *Pome-roy*, or some *Greening*, &c. or may rather seem to abate at least some *Apple* over-tart and severe.

Your *Crab-stock* would be planted about *October*, at thirty two Foot distance, and not *grafted* till the third *Spring* after, or at least not before the *second*.

But if your design be for *Orchard* only, and where they are to abide, an *interval* of sixteen Foot shall suffice for the *Dwarfish* kind, or in the Grounds where the *Red-strake*, or other *Fruit-trees* are of small bulk, provided the ground be yearly turn'd up with the *spade*, and the distance quadrupled where the *Plough* has privileged ; this being the most expedite for such as have no *Nursery* ground.

## C H A P. III.

*Of Graffs and Infitions.*

**M**Ake choice of your *Graffs* from a constant and well-bearing Branch.

And as the *stock* hath a more verdant rind, and is capable to yield more plenty of *juice*, so let the *Graff* have more *Eyes* or *Buds*: Ordinarily three or four *Eyes* are sufficient to give issue to the *Sap*; but as well in *Apples*, and *Pears*, as in *Vines*, those *Graffs* or *Cions* are preferr'd in which the *buds* are not too far asunder, or distant from the foot thereof: and such a number of *buds* usually determining the length of the *Graff*, there may divers *Cions* be made of one *Branch*, where you cannot procure plenty of them for severals.

As to the success of *grafting*, the main point is, to joyn the inward rind of the *Cion* to the inward rind of the *stock*, so that the *sap* of the *One*, may there meet with the *sap* of the *Other*, and these parts should be joyn'd closely, but not too forceably; that being the best and most infallible way, by which most of the quick and juicy parts are mutually united, especially towards the bottom.

If the *stock* be so big as to endanger the pinching of your *Graff*, when the *wedge* is drawn out of the *cleft*, let the inner side of the *Graff*, which is within the wood of the *stock*, be left the thicker, that so the *woody* part of the *Cion* may bear the stress, and the *sappy* part be preserved from bruising. Some by an happy-hand, do with good success *Graff* without cleaving the *stock* at all, only by *Incisions* in the *Rind*, as the *Industrious* Mr. *Austin* teaches us: But since this is not for every *Rustic* hand, nor seems to fortifie so strongly against impetuous *Winds*, before the Union be *secure*, there had need be some extraordinary *defence*.

Choose the streightest and smoothest part of the *stock* for the place where you intend to *Graff*: If the *stock* be all knotty (which some esteem no impediment) or crooked, rectifie it with the fittest posture of the *Graff*.

For a *Graff* covet not a *Cion* too slender; for the *sun* and *Wind* will sooner enforce it to wither: Yet are we to distinguish, that for *Inoculation*, we take the *Bud* from a sprig of the last years shoot; and most allow that the *Cion* should also have some of the former with it, that it may be the stronger to *Graff*, and abide to be put close into the *stock*, which is thought to advance it in bearing.

In *Hereford-shire* they do frequently choose a *Graff* of several years growth; and for the *grafting* of such large *stocks* as are taken out of the *Woods* or *Nurseries*, and fitted into rows for *Orchards*, they choose not the *Graffs* so small as in other Countries they require them; which has, it seems, occasion'd some complaint from them

them that understand not the Reason of the first breach of this Note. Once for all, the stumpy *Graff* will be found much superior to the slender one, and make a much nobler and larger Shoot. This upon experience.

Graff your *Cions* on that side of the *Stock* where it may receive the least hurt from the *South-west* Wind, it being the most common, and most violent that blows in *Summer*; so as the *wind* may blow *it* to the *Stock*, not from it: And when the *Zephyres* of the *Spring* are stirring, choose that *Season* before all others for this work.

Some there are who talk of removing the *Stock* about *Christmas*, and then also *Graff* it; which there be that glory they can successfully do even by the fire side, and so not be forc'd to expect a two or three years rooting of the *Stock*; But in this *Adventure* 'tis advisable to plunge the *Graff* three or four inches deep in the *Stock*. Lastly,

Be careful that the *Rain* get not into the *clefts* of your young grafted *Stocks*: Yet it has been noted, That many old Trees (quite decay'd with an inward hollowness) have born as full burdens, and constantly, as the very soundest, and the Fruit found to be more delicate than usually the same kind from a perfect and more entire *Stock*.

Except some former case requires it, leave not your *Graffs* above four, five, or (at most) six inches of length above the *Stock*; for by the length it draws more feebly, and is more expos'd to the shocks of the *Wind*, or hurt by the *Birds*; and you shall frequently perceive the summities and tops of such young *Graffs* to be mortified and die.

The *Genet-moyle* is commonly propagated by cutting off the *Branch* a little below a *Burr-knot*, and setting it without any more Ceremony; but if they be also grafted first as they grow on the *Tree*, and when they have covered the *head*, cut off below the *Burr*, and set, it is far better: In this separation cut a little beneath the *Burr*, and peel off, or prick the *Bark*, almost to the *knot*: Thus also if the *Branch* have more *knots* than one, you may graff, and cut off yearly, till within half a foot of the very *stem*, which you may graff likewise, and so let stand.

Now for encouragement in transporting *Graffs* at great distance, we find that with little care (their tops uncut and unbruised) they will hold good, and may support the transportation by *Sea* or *Land* from *October* or *November* to the very end of *March*: See Sir H. Plot's *Offers*, Paragr. 75. To which may be added, That if the *Graff* receives no hurt by lying in the *Stock* expos'd to all rain, dews, and severities of *Winter* frosts from *December* to *Spring*, (as has been experimentally noted;) then (by a stronger presumption) in oyled, or rather waxen Leather, it may undoubtedly escape. Some prescribe, That the *ends* shall be stuck in a *Turnip*: and many excellent *Graffers* (*Gentlemen* some of very good credit) have assured us, That the *Graffs* which seem'd withered, and fit to be cast away, have proved the best when tri'd. Thus in honest *Barnaby*



naby Googes noble *Heresbachius* you will find it commended to gather your *Cions* in the *wane* of the *Moon*, at least ten days before you *graff* them; and *Constantine* gives this reason for it, That the *Graff* a little withered, and thirsty, may be the better received of the *Stock*: I know some who keep them in *Earth*, from the end of *October*, till the *Spring*, and will hardly use them before. There are also other inducements for this practice, as *Simon Harwood* pag. 4. has shew'd us; but none beyond our own *experience*, who have known *Graffs* gathered in *December* thrive and do perfectly well.

The best expedient to convey *Graffs* is to stick the *cut ends* in *Clay*, envelop'd with a *clout* to preserve it from falling off; and to wrap the other part of the *Twigs* in dry *Hay* or *straw-bands*, which will secure them both from the *Winds*, *Galling*, and other injuries in *Transportation*: Nay, I have known them sent many *hundred Miles* from *beyond the Seas* accommodated to an ordinary *Letter*, and though somewhat short, and with very few *Buds*, yet with excellent success; and if this course were more universally consider'd, we might be furnish'd with many great *Curiosities* with little difficulty or charge.

## CH A P. IV.

### *Of Variety and Improvements.*

IF any man would have *variety* of unexpected and unknown *Apples* and *Pears*, for the improvement of *Cider*, or *Palate-fruit*, there is more hope from *Kernels* rais'd in the *Nursery* (as has already been directed) than from such tryals of *graffings* as we have yet seen in present use.

But if we would recover the patience, and the sedulity of the *Antient* (of which some brief account will follow) or listen to some unusual Proposals, then may we undertake for some *variety* by *Institions*.

To delude none with Promises, we do much rather recommend the diligence of enquiring from all *Countries* the best *Graffs* of such *Fruits* as are already found excellent for the purpose we design: As from the *Turgovians* for that *Pear* of which *Dr. Pell* gives so good and weighty informations; and of which I had presented me some *Graffs*, together with a taste of the most superlative *Perry* the *World* certainly produces; both which were brought near 800 Miles, without suffering the least diminution of Excellency, by my Worthy Friend Mr. *Hake* a Member of the *R. Society*, in the year 1666, and tasting as high, and as rich as ever to the present year I am writing this *Paragraph*.

But as some sorts are to be enquired after for the *Palate* and the *Table*,

*Table*, so 'tis now our main business to search after such as are excellent for their *Liquor*, either as more pleasant, more *winy*, or more lasting; of which sort the *Bosbury bare-land-Pear* excels. The *Red strake*, *Bromebury Crab*, and that other much celebrated *Wilding* call'd the *Oaken-pin*, as the best for *Cider*; though for sufficient reasons we do yet prefer the *Red strake*, to oblige the emulation of other *Countries*, 'till they find out a *Fruit* which shall excel it, and which we do most heartily wish.

But to pursue the diligence of the *Antients*, we direct the eye to a general expedient for all kind of *varieties* imaginable, and which we hold far better than to present the World with a *List* of the particulars either known, or experimented: For who indeed but a *Fool* will dare to tell *Wonders* in this severe *Age*, and upon an *Argument* which is so environ'd with *Imposture* in most *Writers* old or new? Much less pretend to *Experiments* which may fail to succeed by default of an unhappy *occasion*, when the *conclusion* must be, *Penes Authorem sit fides*.

And truly men receive no small discouragement from the ugly affronts of *Clowns*, and less cultivated persons, who laugh and scorn at every thing which is above their understanding: For example; *I knew a man* (writes Dr. Beale to me) *and he a most diligent Planter and Grafter, who for thirty or forty years made innumerable Essays to produce some change of an Apple by Grafting: It seems he was ambitious to leave his Name on such a Fruit, if he could have obtained it; but always fail'd; for he perpetually made his Trials upon Crab-stocks, or such (at least) as did not greatly differ from the kind; and he ever found that the Graff would predominate.* And how infinitely such Men having lost their own aims, will despise better *Advice*, we leave to observation.

However, let us add, That where nothing is more facile than to raise new kinds of *Apples* (*in infinitum*) from *Kernels*: Yet in that *Apple-Country* (so much addicted to *Orchards*) we could never encounter more than *two* or *three* persons that did believe it: But in other places we meet with many that, on the other side, repute *Wildings*, or (as they call them) *Kernel-fruit*, at all adventure, and without choice, to be the very best of *Cider-fruit*, and to make the most noble *Liquor*. So much does the common judgment differ in several *Countries*, though at no considerable distance, even in *matters* of visible *Fact*, and *epidemical* experience.

It has been soberly affirmed, that by *grafting* any *White Apple* upon an *Elm*, it changes the *Apple*, and particularly to a *red* colour: I have a *Direction* where we may be eye-witnesses of the proof; whatever the Truth of it be, we are not over-hastily to erect *Hercules's Pillars*; but rather to encourage the *Experiment*.

To gratifie yet the *Ingenious*, instruct others, and emancipate us all from these *bastinado Clowns*, we are furnish'd with many *Arguments* and proofs to assure a good success, at least for *variety* and *change*, if not for infinite choice: Two or three antient *References* being duly premis'd; namely, First,

1. That 'tis in vain to expect change of *Apples* from *Grafting* upon differing *Stocks* of *Crabs* or *Apples*.

2. In

2. In vain also are we to look for a kind Tree from a very much differing *Stock*; as an altered *Pear* to grow kindly on a *Crab* or *Apple-stock*, & *contra*. There go about indeed some *jugglings*, but we disdain to name them.

It is one thing to find the kindest *Stock* for the Improvement of any Fruit; as the *Crab-stock* for the delicate Apple, the *Wild* or *Black-Cherry-stock*, for the *grafts* of the fairest *Cherries*; the largest *Vine*, (whose root makes best shift for relief) to accept the *Graft* of the more delicate *Vine*; the *White Pear-Plum Stock*, for the *Abri-cot*, &c. And another thing it is to seek the *Stock* which begets the wonder, variety, and that same transcendant and particular excellency we inquire after: For this must be at more remote distance; and we offer from the *Ancients* to show how it may be at any distance whatsoever: But the whole expedient seems to be hinted by Sir H. Plat, pag. 72. where he affirms, that *If two Trees grow together, that be apt to be grafted one into another, then let one branch into another, workmanly joyning Sap to Sap*. This our *Gardeners* call *Grafting by Approach*, and is explicated at large by *Columella*.

But in this express *Rule* he is too narrow for our purpose, and far short of old experience; as we find in *Parag. 63.* where he affirms, *We may not graft a contrary Fruit thereon*. Against this we urge; That any contrary *Fruit* may be adventured, and any Fruit upon any fruitless *Stock* growing in propinquity in the same *Nursery*; as it is not only affirm'd, but seriously undertaken, and experimentally proved by the sober *Columella*, in several of his *Treatises*; Turn to the *eleventh* Chapter of his *fifth* Book, (*Stephens* Edition) *Sed cum antiqui negaverint posse omne genus surculorum in omnem Arborem inseri, & illam quasi finitionem, qua nos paulo ante usi sumus, veluti quandam legem sanxerint, eos tantum surculos posse coalescere, qui sint cortice, ac libro, & fructu consimiles iis arboribus quibus inseruntur, existimavimus errorem huius opinionis discutendum, tradendamque posteris rationem, qua possit omne genus surculi omni generi Arboris inseri*. And the example follows in a *Graft* of an *Olive* into a *Fig-stock* by *Approach* (as we call it,) which he also repeats in the *27th*. Chapter of his Book *De Arboribus*, without altering a syllable. But possibly in this check at the *Ancient* he might aim at old *Varro*, whom we find threatening no less than *Thunderbolts* and *Blasts* to those who should attempt these strange *Marriages*, and did not sort the *Graft* with the *Tree*; consult *lib. 1. cap. 4c.* And yet you may see this *Art* assum'd by *Columella* for his own invention (1500 years since) to be no newsto *Varro* 200 years older; where he goes on, *Est altera species ex arbore in arborem inferendi nuper animadversa in arboribus propinquis, &c.* Though here again we may question our Masters *nuper animadversa* too; since before he was born *Cato* relates it as usual to *Graft Vines* in the manner by them prescribed, *cap. 41. Tertia instio est: Terebra vitem quam inseres, &c.* Which by the way makes us admire how the witty *Walchins* in his *Discourse De vitibus fructuariis*, pag. 265. could recount the *grafting* of *Vines* amongst the wonders of *Atodern Inventions*.



But it seems *Varro* and his *Contemporaries* did extend the practice beyond *Cato*; and *Columella* proceeded further than *Varro*, even to all sorts of Trees, however differing in nature, quality, bark, or season: And then *Palladius* assumes the result, and gives us the particulars of the success in his *Poem, De Insitionibus*. And to these four as in chief (no phantastical or counterfeit persons) we refer the Industrious.

But be pleas'd to take this note also: As soon as your *Graff* hath attained to a *second*, or at farthest a *third* years growth, take it off the *Stock*, and then graff it upon a *Stock* of a more *natural* kind: For in our own *Trials* we have found a *graff* prosper the second year exceeding well; yet the third the whole growth at once blasted quite to the very *Stock*, as if *Varro's* Augurs had said the word.

To this add, the making use of such *Stocks* as in this *Experiment* may contribute some special aid to several kinds of humane *Infirmities*: As suppose the *Birch* Tree for the *Stone*, the *Elm* for *Feavers*, &c. For 'tis evident, that by such *Insitions*, the *Branch* may convert the *Sap* of the *Root* even of another *species* into its own nature, and alter all its *properties*; though in *some* they *domineer*, as the *Branch* of the *Apple* in the *Rhamnus*, or *Mezerea*, acquires a *Purgative* quality. And by these means why may not the *Fruit* by effectual *Marriages* be rendred *Cordial*, *Astringent*, *Purgative*, *Sudorific*, *Soporiferous*, and even *Deleterious* and *Mortal*: But this we only hint.

Moreover, To *graff* rather the *Wilding*, or *Crab*, than the *Pepin*, because the *Wilding* is the more *natural*; and *Nature* does more delight in *progress*, than to be *Retrograde* and go backwards.

I should also expect far more advance from a more *pungent sap*, than from *Inspid*; as generally we see the best and vigorous *juices* to salute our *Palats* with a more agreeable *piquancy* and tartness; for so we find the relish of the *Stocking-Apple*, *Golden Pepin*, *Pearmain*, *Eliot*, *Harvy*, and all (both *Russetings* and *Greenings*) to be more poignant than of others.

And here we note from *Palladius*, That the *Ancients* had the success which we all, and particularly Sir *H. Plat*, does so frequently deny, as in the particular of *graffing* the *Apple* on the *Pear*, & *contra*. Let us hear him *de Pomo*.

The *Graffed-Crab* its bushy Head does rear,  
Much *Meliorating* the inserted *Pear*:  
Its self to leave its *Wildness* does invite,  
And in a *Nobler issue* to delight.

*Insita proceris pergit concrescere ramis,  
Et sociam mutat malus amica Pyrum:  
Sæque feros sylvis hortatur relinquere mores,  
Et partu gaudet nobiliore frui.*

*Pallad. de Insitionib. lib. 14.*

But

But possibly *Palladius* assum'd this *Poetical* expreffion, upon preffumption, that no man in his days durst degrade the moft excellent *Quince* to fupport the *Cyon* of another *Fruit*, which then muft be of lefs efteem, but we by our *luxury* have found the fuccefs.

And we have good argument to believe; That *Virgil*, and *Columella*, in feveral of their wonderful Relations of thefe kinds of mixture, (which but for the prolixity we might now recite) did not fo far affect *Wonders* as to defert the truth.

You may alfo obferve, That as well the *French Gardiner*, and our *Modern Planters*, have found the fame benefit from the *Stock* of the *Quince*, as old *Palladius* did, it feems, acknowledged; yet (as he conceiv'd) more hofpitable ftill with its own kindred, and that

Though the *Quince-stock* admit all other *Fruit*,  
Its *Cyon* with no other *stock* will fuit:  
Scorning the *Bark* of Foreign Trees, does know  
Such lovely *Fruit* on no mean *ftem* can grow:  
But the *Quince-Graff*, to the *Quince-stock* is joyn'd,  
Contented only to improve its kind.

*Cum præftet cunctis fe fulva cydonia pomis,  
Alterius nullo creditur hofpitio.*

*Roboris externi librum afpernata fuperbit,  
Scit tantum nullo crefcere poffe decus:  
Sed propriis pandens cognata cubilia ramis,  
Stat, contenta fuum nobilitare bonum.*

*Pallad. de Malo Cidonio.*

Laftly, We did by unexpected chance find the facility of *graffing* the very youngft *stocks*, even of one years growth, by the *Root*: At a fecond removal of the *stocks* (being then of two years growth) we obferved fome *Roots* fo faft clofed together into one, as not to be divorced: Hereupon we concluded, If casualty, or negligence, chance of fpace, or oppreffion of neighbourhood did this, by *Art* it might be done more effectually, and poffibly to fome defirable purpofe; for that then the *stock* was more apt to receive a maftering *Impreffion*; and any *Garden Plant* whatfoever might by this *procefs* interchange and mingle their *Roots*. But this can extend no farther than the *stock* may prevail with the *Graff*.

And thus we have prefented our diligent *Ciderift* with what Obfervations and Arguments of Encouragement, grounded on frequent *Experience*, we have received from our moft ingenious *Correspondents*, efpecially the Learned and truly Candid Dr. *Beale*, in whole *Perfon* we have fo long entertain'd you: and to thefe we could add fundry others, were it not now time (whiles we difcourfe of *poffibilities*) to conclude with fomething certain, and to fpeak of what we have.

For the kind then of *Cider-Apples* in being; *Gloucefter-shire* affects the *Bromsbury Crab*; It affords a fmart, winy *Liquor*, and is

peculiarly hardy, but not so proper for a cold and late-bearing *Climate*, it being not ripe in *hot Land* till the end of *Autumn*, nor fit to be ground for *Cider* till *Christmas*, lying so long in heaps and preparation.

It is in the same *Shire* that they likewise much esteem of the *white* and *red Must-Apple*, the sweetest as well as sowrest *Pepin*, and the *Harvy-Apple*, which (being boyl'd) some prefer to the very best of all *Ciders*; though from any experience we have yet seen, we cannot recommend it, and it will want more particular and infallible *Directions* before we can be reconciled to the *Adventure*, which we have observed so frequently to miscarry.

But about *London*, and the more Southern *Tracts*, the *Pepin*, and especially the *Golden*, is esteemed for the making of the most delicious of that *Liquor*, most wholesom, and most restorative; and indeed it may (in my poor judgment) challenge those *perfections* with very good reason.

By other the *Pearmain* alone is thought to come in competition with the best; but, say they, the *Cider* is for the most part found of the weakest, unless encourag'd with some agreeable *Pepin* to inspirit it; whereas *this* is to be taken according to the constitution of the *Fruit*; for even *Pepins* do differ as much from *Pepins* in Taste and *Liquor*, as the *Kind*, and the *Soil* dispose them; nay, though of the same *Species*; so as the *Cider* of the *Pearmain* (though likewise very different) does not seldom exceed it in that briskness which others attribute to the *Pepin*, which is for the most part more smooth and less *poinant*: I conceive a good way of extracting the *Spirits* of these *Fruits*, might prove a likely *Criterion* to ground our judgments on in all these niceties; whilst by the way, we may note, that of all *Apples*, that bear one general Name, the *Pepin* seems the most to differ; and the *Cider* from the genuine *Cider-Fruit*, keeps nearest to the same strength and relish.

Some commend the *Fox-Whelp*; and the *Gennet Moyle* was once prefer'd to the very *Redstrake*, and before the *Bromsbury Crab*; but upon more mature consideration, the very *Criticks* themselves now *Recant*, as being too effeminate and soft for a *judicious* *Palate*.

The *Red-strake* then amongst these accurate *Tasters* hath obtained the absolute preeminence of all other *Cider-fruit*, especially in *Hereford-shire*, as being the richest and most *vinous* *Liquor*, and now with the more earnestness commended to our practice, for its celerity in becoming an *Orchard*, being ordinarily as full of *Fruit* at *ten* years growth as other *Trees* are at *twenty*; the *Pepin* or *Pearmain* at *thirty*: And lastly, from that no contemptible quality, That though the smiles of it intice even on the *Tree*, as being indeed better than most other *Table fruits* whilst hanging, yet it needs no *Priapus* for Protector, since (as beautiful as 'tis) it has no such temptation to the *Tast*, 'till it be either *baked*, or converted into *Cider*. The same may be affirmed also of the *Bromsbury Crab*, *Bareland-Pear*, and many other *Wildings*, who are no less at their *Self-defence*; yet the *Gennet-Moyle* at due *maturity*, has both a gentle, and agreeable relish; their unagreeableness to the *Palate* (as else-where



where noted) proceeding only from the separation the *juice* makes from the *Pulp*, which even *Children* do remedy by *confusing* them on their sharpned Elbows; which (if thoroughly weigh'd) seems to *dispute*, if not *overthrow* some *Hypotheses* of *Fermentation*.

In sum, The *Red-strake* will at three years *grafting* give you fair hopes, and last almost an hundred years; if from sundry mens *Experience* of more than 60 years, we may divine, and that it agree with the *Soyl*. And the *Gennet-Moyles* hasten to an Orchard for *Cider* without trouble of *Art* or *Grafting*: But note, That this *Tree* is very apt to contract a *bur-knot* near its Trunk, where it begins to divide; and being cut off under that *boss*, commonly grows (if so set) and becomes speedily a Tree, except it encounter an extraordinary dry *Summer* the first year to give it check. And though the knack of *grafting* be so obvious, yet this more appearing facility does please the lazy *Clowns*, that in some places they neither have nor desire any other *Orchards*; and how this humour prevails you may perceive by the hasty progress of our *Kentish Codlin* in most parts of *England*. But this hasty growth and maturity of the *Tree* is by another *Instance* confirm'd to us from that worthy *Gent.* Mr. *Blount* of *Orleton*, who writes me word, that some of the rejected *Spray*, or *Prunings* of the *Gennet-Moyle*, taken by chance to *rice* a Plot of *Pease* (though stuck into the Earth but at *April*) put forth root, grew, blossom'd, and bore *Apples* the same year.

See C. Taylor's  
discourse of  
Cyder.

But to advance again our *Red-strake*, even above the *Pepin*, and the rest (besides the celerity of the improvement and constant *burthen*) consider we the most incredible product, since we may expect from each *Apple* more than double the quantity; so as in the same *Orchard*, under the same *culture*, thirty *Red-strake* Trees shall at ten years *grafting* yield more *Cider* than a *hundred* of those *Pepins*, and surmount them in proportion during their period at least sixty or seventy years: So that granting the *Cider* of the *Golden-Pepin* should excel, (which with some is precarious) yet 'tis in no wise proper for a *Cider-Orchard*, according to our general design, not by half so soon bearing, nor so constantly, nor in that quantity, nor *fulness* or *security*; for as 'tis no tall Tree, so is it less expos'd to *blasts* and the like inconveniences; besides, it is a good *kitchen-fruit* for the season it continues.

Concerning *Perry*, the *Horse-Pear* and *Bear-land-Pear* are reputed of the best, as bearing almost their weight of spritful and *vinous* Liquor. The Experienced prefer the *tawny* or *ruddy* sort, as the colour of all other most proper for *Perry*: They will grow in *common-fields*, *gravelly*, *wild*, and *stony* ground, to that largeness as one only Tree has been usually known to make three or four *Hogsheads*: That of *Bosbery*, and some others, are so tart and harsh that there is nothing more safe from plunder, when even a *Swine* will not take them in his mouth. But thus likewise would the abundance preserve these Fruits, as we see it does in *Normandy*.

Aph. 43.  
Aph. 34.

Some

Some have reckon'd the *Codling* among the *Cider-fruits*, it is a Tree of Consort, propagated by *cuttings*, improv'd by *Grafting*, continable to *Cont'espalieres* or *Hedges*, but more plentifully bearing when more at liberty.

## CH A P. V.

### *Of the Place and Order.*

**W**E do seriously prefer a very wild *Orchard*, as mainly intended for the publick utility, and to our *purpose* of obliging the *People*, as with a speedy *Plantation* yielding store for *Cider*: Upon this it is that we do so frequently inculcate, how well they thrive upon *Arable*, whilst the continuing it so accelerates the growth in almost half the time: And if the *Arable* can be so levell'd (as commonly we see it for *Barly-land*) then without detriment it may assume the Ornament of *Cyrus*, and flourish in the *Quincunx*.

If it be *shallow* Land, or must be rais'd with high *Ridges*, then 'tis necessary to have more regard of planting on the *tops* of those eminencies, and to excuse the unavoidable breach of the *decussis*, as my Lord *Verulam* excuseth the defect of our humane *phanties* in the *Constellations*, which obey the *Omnipotent* order rather than ours: Add to this the rigour of the *Royal Society*, which approves more of *plainness* and *usefulness*, than of *niceness* and *curiosity*; whilst many putting themselves to the vast charge of levelling their grounds, oftentimes make them but the worse; since where the places are full of gasty inequalities, there may be planted some sorts of *Cider fruit*, which is apt by the great burden to be press'd down to the ground, and there (whiles it hides *Irregularities*) to bear much better, and abundantly beyond belief; for so have been seen many such recumbent *Pear-trees* bear each of them *two, three, yea, even to six* or more *Hogsheds* yearly.

And for this *Cider*, whilst we prefer some sorts of *Wildings* which do not tempt the *palate* of a *Thief*, by the caution we shall not provoke any man to repent his charge from the necessity of richer and more reserv'd *Enclosures*; Though we have frequently seen divers *Orchards* successfully planted on very poor *Arable*, and even in stony *Glebe, gravel* and *clay*, and that pretty high on the sides and declivities of *Hills*, where it only bears very short grass, like to the most ordinary *Common*, not worth the charge of *Tillage*: And yet even there the *Tenants* and *Confiners* sometimes enclose it for the *Fruit*, and find their reward, though not equally to such *Orchards* as are planted on better ground, and in the *Vallies*. Hence we suggest, That if there be no *Statute* for it, 'twere to be wished there were a *Law* which should allow *endeavours* of this nature

nature out of the *Common field*, to enclose for these *Encouragements*; since both the *Publick* and the *Poor* (whatever the clamour is) are advantaged by such *Enclosures*, as *Tusser* in his old Rhimes; and all indifferent observers apprehend with good reason.

True indeed it is, That all Land is not fit for *Orcharding*; so as even where to form just *Inclosures* being either too *shallow* and *dry*, or too *wet* and *starving*: But this (saith the judicious Mr. *Buckland*) we may aver, That there are few *Parishes*, or *Hamlets* in *England* where there are not some *fat* and *deep* *Headlands* capable of *Rows* of *Trees*; and that (as hath been said) the raised *Banks* of all *Inclosures* generally by the advantage of the *depth*, *fatness*, and *health* of their *Mold*, yield ready opportunity for *planting*; (yea, and in many *Countrys* multitudes of *Crab stocks* fit to be *grafted*;) in which latter (saith he) I have frequently observed very goodly *Fruit-bearing Trees*, when in the same soil *Trees* in *Orchards* have been poor and worth nothing. To conclude,

If the soil be very bad and unkind, any other *Fruit* (which it may more freely yield without requiring much *depth*, and less *sun*) may be planted instead of *Apples*. In the mean time for those who should rather choose to confine their *Cider Plantation* into a narrower circle: It has been calculated, that one *Acre* of *Ground* may contain an hundred *Red-strakes* at 20 *foot* interval; which (supposing to have cost *five pounds* to perfect the *Orchard*) may well yield the owner an *hundred bushels*, one tree with another at seven years growth; which at but *six pence per Bushel* amounting to *fifty shillings* and the *Herbage* twenty, ought to be no discouragement to the planter; since by the eighth or ninth year he may expect at the least *three hundred bushels*, and in fruitful years *500 Bushels* worth *eighteen pence the Bushel*, an extraordinary improvement, as will appear upon calculation.

## C H A P. VI.

### Of Transplanting, and Distance.

THE most proper season for *Transplanting* is before the hard Frosts of *Winter* surprize you, and that is a competent while before *Christmas*: And the main point is, to see that the *Roots* be larger than the *Head*; and the more ways that extends, the better and firmer.

If the *stock* seems able to stand on its own three or four legs (as we may call 'em,) and then after settlement some stones be heaped or laid about it, as it were gently wedging it fast, and safe from *Winds* (which *stones* may after the second or third year be removed) it will salve from the main danger: For if the *Roots* be much shaken the first *Spring*, it will hardly recover it.

You



You may transplant a *Fruit-Tree* almost at any tolerable *season* of the *Year*, especially if you apprehend it may be spent before you have finish'd your work, having many to remove: Thus, let your *Trees* be taken up about *Albion-tide*, (or as soon as the *leaf* begins to fall:) then having trimm'd and quickned the *Roots*, set them in a *Pit*, forty, fifty, or a hundred together, yet so as they may be covered with mold, and kept very fresh: By the *Spring* they will be found well cured of their *wounds*, and so ready to strike *root* and put forth, that being *Transplanted* where they are to stand, they will take suddenly, and seldom fail; whereas being thus cut at *Spring* they recover with greater hazard.

The very *Roots* of *Trees* planted in the ground, and buried within a quarter of an Inch, or little more, of the level of the *Bed*, will sprout, and grow to be very good *Stocks*. This and the other being Experiments of our own, we thought convenient to mention.

By the oft removal of a *Wild-stock*, cutting the ends of the *Roots*, and dis-branching somewhat of the *Head* at every *change* of place, it will greatly abate of its natural *wildness*, and in time bring forth more *civil* and *ingenuous* Fruit: Thus *Gilly-flowers* do (by oft removals, and at *full-Moon* especially) increase and multiply the leaves.

Plant not too deep; for the *over-turf* is always richer than the next Mold. How material it is to keep the *coast* or side of the *Stock*, as well in *Fruit-trees* as in *Forest*, we have sufficiently discuss'd; nor is the Negative to be prov'd.

See Aph. 35. For the *distance* in *Fields*, they may be set from *thirty two* to *sixty Foot*, so as not to hinder the *Plough*, nor the benefit of manure and soil; but in *hedg-rows* as much nearer as you please, Sun and Air considered.

## C H A P. VII.

### Of the Fencing.

Seeing a *Cider-Orchard* is but a wild Plantation, best in *Arable* well enclos'd from *Beasts*, and yet better on the *Tops*, *Ridges*, and natural *Inequalities*, (though with some loss of *Order*, as we shew'd,) one of the greatest discouragements is the *preserving* of our *Trees* being planted, the raising of them so familiar.

We have in our *sylva* treated in particular of this, as of one of the most material *obstacles*; wherein yet we did purposely omit one *Expedient*, which came then to our hands from the very Industrious Mr. *Buckland* to the Learned Dr. *Beal*: You shall have it in his own words.

*This of Fencing single Trees useth to be done by Rails at great charges;*

charges; or by Hedges and Bushes, which every other year must be renew'd, and the materials not to be had in all places neither. I therefore prefer and commend to you the ensuing form of Planting and Fencing, which is more cheap and easie, and which hath other Advantages in it, and not commonly known. I never saw it but once, and that imperfectly performed; but have practis'd it my self with success: Take it thus.

Set your Tree on the Green-sward, or five or six inches under it if the soil be very healthy; if moist or weeping, half a foot above it; then cut a Trench round that Tree, two foot or more in the clear from it: Lay a rank of the Turfs, with the grass outward, upon the inner side of the Trench towards your Plant, and then a second rank upon the former, and so a third, and fourth, all orderly plac'd, (as in a Fortification) and leaning towards the Tree, after the form of a Pyramide, or larger Hop-hill: Always as you place a row of Turfs in compass, you must fill up the inner part of the Circle with the loose Earth of the second spit which you dig out of your Trench, and which is to be two foot and half wide, or more, as you desire to mount the hillock, which by this means you will have rais'd about your Plant near three foot in height. At the point it needs not be above two foot or eighteen inches diameter, where you may leave the Earth in form of a Dish, to convey the Rain towards the body of the Tree; and upon the top of this hillock prick up five or six small Briars or Thorns, binding them lightly to the body of the Plant, and you have finish'd the work.

The commodities of this kind of Planting are,

First, Neither Swine, nor Sheep, nor any other sort of Cattel can annoy your Trees.

Secondly, You may adventure to set the smaller Plants, being thus rais'd, and secur'd from the reach of Cattel.

Thirdly, Your Trees fasten in the Hillock against violence of Winds, without Stakes to fret and canker them.

Fourthly, If the soil be wet, it is hereby made healthy.

Fifthly, If very dry, the hillock defends from the outward heat.

Sixthly, It prevents the Couch-grass, which for the first years insensibly robs most plants in sandy grounds apt to graze. And,

Lastly, The grazing bank will recompence the niggardly Farmer for the waste of his Ditch, which otherwise he will sorely bethinke.

In the second or third year (by what time your Roots spread) the Trench, if the Ground be moist, or Seasons wet, will be near fill'd up again by the treading of Cattel; for it need not be cleansed; but then you must renew your Thorns: Yet if the Planter be curious, I should advise a casting of some small quantity of rich Mold into the bottom of the Trench the second year, which may improve the growth, and invite the Roots to spread.

In this manner of Planting, where the soil is not rich, the exact Planter should add a little quantity to each Root of Earth from a frequented High-way, or Yard where Cattel are kept; One Load will suffice for six or seven Trees; this being much more proper than rotten soil or loose Earth; the fat Mold best agreeing with the Apple Tree.

*The broader and deeper your Ditch is, the higher will be your Bank, and the securer your Fence; but then you must add some good Earth in the second year, as before.*

*I must subjoyn, That only Trees of an upright growth be thus planted in open grounds; because spreading of low growing Trees will be still within reach of Cattel as they encrease: Nor have I met with any inconvenience in this kind of Transplanting (which is applicable to all sorts of Trees) but that the Mole and the Ant may find ready entertainment the first year, and sometime impairs a weak rooted Plant; otherwise it rarely miscarries. In sum,*

*This manner of Fencing is soon executed by an indifferent Work-man, who will easily set and guard six Trees in a Winter day. Thus far Mr. Buckland: To which we shall only add, That those which are planted in the Hedg-rows need none of these defences; for (I am told) in Hereford-shire in the Plantations of their Quick-sets, or any other, all men did so superstitiously place a Crab-stock at every twenty foot distance, as if they had been under some rigorous Statute requiring it; and I am of Opinion, that 'twere better to be content with Fruit in the bordering Mounds, than to be at all this trouble to raise Tumps, or temporary banks in the midst of an Inclosure; or if Pears will thrive in the Plain of the Ortyard, as we frequently see them, (where neither Apple or other Fruit could in appearance be expected) then Crabs, which may be raised on the Mounds, will kindly mix the Liquor into very good Beverage.*

## C H A P. VIII.

### *Of Pruning and Use of the Fruit-Trees.*

**T**HE Branches are to be lopp'd in proportion to the bruises of the Roots, whose fibers else should only be quickned, not altogether cut off nor intangled: For the Top, let a little of each arm be lopp'd in Cider-fruit only; but for the Pears, cut two or three buds deep at the summities of their aspiring Branches, just above the eye slanting; this will keep them from over-hasty mounting, reduce them into shape, and accelerate their bearing.

To this we add again out of Dr. Beals Herefordshire Orchards, pag. 23. *In a grafted plant every Bough should be lopped at the very tops, in Apples and Pears, as in Cherries and Plums, if Transplanted without violation of Roots, which only indeed renders it less necessary.*

*In most kinds of natural Plants the Boughs should not at all be lopped, but some taken off close to the Trunk, that the Root at first Transplantation be not engaged to maintain too many Suckers, this*



this to be understood, though of such as grow naturally from the Kernel, or the *Bur-knot*; especially if removed after they are well rooted. *And this must be done with such discretion, that the Top-branches be not too close together; for the natural Plant is apt to grow spiry, and thereby fails of fruitfulness. Therefore let the reserved Branches be divided at a convenient roundness.*

*The Branches of those we call natural Plants (for usually the Grafted generally fail) that are cut off, may be set, and will grow, though slowly.*

*If the Top prove spiry, or the fruit unkind, then the due remedy must be in re-graffing. See Chap. xxviii. in Sylva.*

*Besides the Perrys, drier and preserv'd Fruit, useful is the Pear-Tree (and best the most barren, or Pig-taile, as they call it, which is the Wild Pyrafter) for its excellent colour'd Timber, hard and levigable (seldom or not ordinarily worm-eaten) especially for Stools, Tables, Chairs, Pistol-Stocks, Instrument-Maker, Cabinets, and very many works of the Joyner, (who can make it easily to counterfeit Ebony) and Sculptor, either for flat, or emboss'd-Works, and to Engrave upon, because the Grain intercepts not the Tool. And so is likewise both the Black-Cherry (especially for the Necks of Musical-Instruments) and the Plum-Tree.*



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## ANIMADVERSION.

**I***F some of the following Discourses seem less constant, or (upon occasion) repugnant to one another, they are to be consider'd as relating only to the several gusts, and guises of Persons and Countries, and not to be looked upon as recommended Secrets, much less impos'd, farther than upon Tryal they may prove grateful to the Publick, and the different inclinations of those who affect these Drinks: nor in reason ought any to decry what is propos'd for the universal Benefit; since it costs them nothing but their civility to so many obliging Persons.*

J. E.

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# GENERAL ADVERTISEMENTS

Concerning

# CIDER:

By D<sup>r</sup> B E A L E.

1. **H**E that would treat exactly of *Cider* and *Perry*, must lay his foundation so deep as to begin with the *Soyl*: For as no Culture or Graffs will exalt the *French Wines* to compare with the *Wines* of *Greece*, *Canaries*, and *Montefasco*; so neither will the *Cider* of *Bromyard* and *Ledbury* equal that of *Hamlacy*, and *Kings-Capell*, in the same small County of *Hereford*.

2. Yet the choice of the *Graff* or *Fruit* hath so much of prevalence, that the *Red-Strake-Cider* will every where excel common *Cider*, as the *Grape* of *Frontignac*, *Canary*, or *Baccharach*, excels the common *French Grape*; at least, till by time and traduction it degenerateth.

3. I cannot divine what *Soyl* or what *Fruit* would yield the best *Cider*; or, how excellent *Cyder* or *Perry* might be if all *Soils* in common and all *Fruit* were tried; but for *thirty years* I have tried all sorts of *Cider* in *Hereford-shire*, and for three years I have tried the best *Cider* in *Somerset-shire*, and for some years I have had the best *Cider* of *Kent* and *Essex* at my call; yet hitherto I have always found the *Cider* of *Hereford-shire* the best, and so adjudged by all good *Palates*. But I shall rejoice to be better informed, and truly from all other *Countries*; and do both wish and hope, that in a short time, we shall every where be rich in many *Improvements*.

4. I cannot undertake to particularize all kind of *Soil*, no more than to compute how many *syllables* may be drawn from the *Alphabet*; the number of *Alphabetical Elements* being better known than the *Ingredients* and *Particles* of *Soil*, as *Chalk*, *Clay*, *Gravel*, *Sand*, *Marle*, (the tenaciousness, colour, and innumerable other qualities, shewing endless diversities;) and the *Fruit* of *Crabs*, *Apples*, and *Pears*, being as various as of *Grapes*, *Figs*, and *Plums*.

5. Yet in gross, this I note; That as *Bacchus amat colles*, and a light ground, so our best *Cider* comes from the hot *Rie-Lands*: In fat *Wheat-Land* it is more sluggish; and in white, stiff *Clay-Land*

*Land* (as in *Woollhope* in *Herefordshire*) the common *Cider* retains a thick whey-colour, and not good: Only such as riseth there (by the diligence or some *Art* of the *Inhabitants*) is bright and clear, and so lively, that they are apt to challenge the best.

6. Some *Cider* mixeth kindly with *Water* in the *Cider-Mill*, and will hold out a good small *Wine*, and less inflaming, all the following *Summer*. Some *Cider* (as of *Long-hope*, a kind of four *Wood-Land* Country of *Herefordshire*) will not bear any mixture of *Water*, but soon decay, and turn more harsh and sour: And thus we noted in *France*, some coarse *Wines* stuck like paint in the *Glass*, unwilling to incorporate with the *Water*: *Vin d'Aye*, and other delicate *Wines*, did spread themselves more freely, as *gold* is more ductile than baser metals.

7. Some would, for a fit, extol the *Cider* of *Permain*, some of *Pepins*; (and of *Pepins* I have found a congenial *Liquor*, less afflicting *splenetic* persons, as in mine own experience I conceived:) And Sir *Henry Ling* once extolled the *Cider* of *Eleots* (as richly bedewing the *Glais* like the best *Canaries*;) and full Hogheads of the *Stocking-Aple* have been tried amongst us, but disappointing our expectation, though perhaps by evil ordering: Yet Mr. *Gritsen* highly boasted a Mixture of *Stocking-Aples* and *May-Pears*, tried (as I take it) by himself: After many years trial of those and many other kinds, the *Red-Brake* carried the common fame, and from most of those reduced admirers. The *Gennet-Moyl Cider* was indeed more acceptable to tender *Palats*; and it will require *Custom* and *Judgment* to understand the preferency of the *Red-Brake*, whose mordicant sweetness most agreeably gives the farewell, endearing the relish to all flagrant *Palats*; which both obliges, whets, and sharpens the *stomach* with its masculine and *winy* vigour; and many thousands extol it for exceeding the ordinary *French-Wine*: But grant it should not be so strong as *Wine*; let me ask how many sober persons abroad addict themselves to meer *Wine*? Then compare this with diluted *Wine*, as usually for temperate men, and then let the trial be made, whether the *Pepin Cider* or *Red-Brake* will retain the *winy* vigour in greater proportion of *Water*. Add to this, That they commonly mingle *Water* in the *Press* with *Apples* (a good quantity) whiles they grinde the *Apple*; and the *Water* thus mixed, at that time, does so pleasingly incorporate in the grinding, fermentation, and maturity of *Veffelling*, that 'tis quite another and far more pleasant thing than if so much or half so much *Water* were mingled in the *Cup* at the drinking time; as *Salt* on the *Trencher* will not give *Beef*, *Pork*, or *Neats-Tongue*, half that same relish which duly powder'd and timely season'd.

8. I did once prefer the *Gennet-moyl Cider*, but had only the *Ladies* on my side, as gentler for their sugary *palats*, and for one or two sober draughts; but I saw cause to recant, and to confess the *Red-Brake* to warm and whet the *Stomach*, either for meat or more drink.

9. The right *Cider-fruit*, is far more succulent, and the *Liquor* more easily divides from the *pulp* of the *Apple*, than in best *Table-fruit*,



*fruit*, in which the juice and the pulp seem friendly to dissolve together on the tongues end.

10. The Liquor of best *Cider-fruit* in the *Apple*, in best season of ripeness, is more brisk and smart than that which proves duller *Cider*: And generally the fiercest *Pears*, and a kind of tamer *Crabs*, (and such was the *Red-strake* called in my memory) makes the more winy *Cider*.

11. *Palladius* demeth *Perry* to bear the heat of *Summer*; but there is a *Pear* in *Bosbury*, and that Neighbourhood, which yields the *Liquor* richer the *second* year than the *first*, and so by my experience very much amended the *third* year: They talk much higher; but that's beyond my account.

12. As *Cider* is for some time a sluggard, so by like care it may be retained to keep the *Memorials* of many *Consuls*; and these smoaky bottles are the *nappy Wine*. My Lord *Scudamore* seldom fails of three or four years; and he is nobly liberal to offer the *Trial*.

13. As *red Apples*, so *red Pears* (and amongst them the *red Horse-pear* next to the *Bosbury*) have held out best for the stomach and durance: But *Pears* do less gratifie the stomach than *Apples*.

14. The season of *grinding* these *harsh Pears* is after a full maturity, not till they have dropt from the Tree, and there lain under the Tree, or in heaps, a *week*, or thereabouts.

15. And so of *Cider-Apples*, as of *Grapes*, they require full maturity, which is best known by their natural *fragrancy*; and then also, as ripe *Grapes* require a few mellowing days, so do all *Apples*, as about a week or little more, so they be not bruised, which soon turns to rottenness; and better sound from the Tree than rotten from the heap; though yet the juice of *Apples* and *Pears* (yea, of *Cherrys* or *Grapes*) is not altogether destroy'd, or quite petrified, as soon as the *Pulp* seems to be *corrupted*; neither haply needs there such curiosity, to cull and pick them so accurately, as some prescribe, though doubtless the cleaner, and less contaminated, the better.

16. That due maturity, and some rest on the heap, does makes the *Liquor* taste rather of *Apples* than *winy*, hath no more truth, (if the *Cider* be kept to fit age) than that very old *Cheese* doth taste of a *Posset*.

17. The harsher the *wild-fruit* is, the longer it must lye on heaps; for of the same fruit, suddenly ground, I have tasted good *Ver-juice*; being on heaps till near *Christmas*, all good-fellows called it *Rhenish-wine*.

18. The *Grinding* is somewhat considerable, rather too much than too little; here I saw a *Mill* in *Somersetshire* which grinds half a *Hoghead* at a *grist*, and so much the better ground for the frequent rolling.

19. \* Soon after *grinding* it should be *prest*, and immediately be put into the *Vessel*, that it may ferment before the *spirits* be diffused; and then also in fermenting time the *Vent-hole* should not

\* See for This excellent directions in Mr. Newburghs preserving of the surface; C. Taylors Vessel, and Dr. Smiths closing of it up.

be so wide as to allow a prodigal waste of the *spirits*; and as soon as the ferment begins to allay, the *Vessels* should be filled of the same, and well stopped.

20. Of late 'tis much commended, that before it be *prest*, the *Liquor* and *Must* should for four and twenty hours ferment together in a *Vat* for that purpose, covered, as *Ale* or *Beer* in the *Test-vat*, and then tunned up. This is said to enrich the liquor, and to give it somewhat of the *tincture* of some *red Apples*, as I have seen, and very well approved.

21. As *Sulphur* hath some use in *Wines*, so some do lay *Brimstone* on a ragge, and by a *wire* let it down into the *Cider-Vessel* and there fire it; and when the Vessel is full of the *smoak*, the liquor speedily poured in ferments the better. I cannot condemn this, for *Sulphur* is more kind to the *Lungs* than *Cider*, and the impurity will be discharged in the ferment.

22. *Apples* over-long hoarded before *grinding* will for a long time hold the liquor *thick*; and this liquor will be both pleasant, and as I think, wholesome; and we see some rich *Wines* of the later *Vintage*, and from *Greece*, retain a like crassitude, and they are both *meat* and *drink*.

23. I have seen thick harsh *Cider* the second *Summer* become clear and very richly pleasant; but I never saw clear *acid Cider* recover.

24. *Wheat* or *Leaven* is good and kind in *Cider*, as in *Beer*; *Juniper-berries* agree well and friendly for *Coughs*, weak *Lungs*, and the aged, but not at first for every *Palate*: The most infallible and undiscerned improver, is *Mustard* a *Pint* to each *Hogshead*, bruised, as for sauce, with a mixture of the same *Cider*, and applied as soon as the Vessel is to be closed after fermenting.

25. *Bottleing* is the next improver, and proper for *Cider*; some put two or three *Raisins* into every *Bottle*, which is to seek aid from the *Vine*. Here in *Somersetshire* I have seen as much as a *Walnut* of *Sugar*, not without cause, used for this *Country Cider*.

26. *Crabs* do not hasten the decay of *Perry*, but preserve it, as *Salt* preserves *flesh*. But *Pears* and *Crabs* being of a thousand kinds require more *Aphorisms*; this only I would *Note*, that *Land* which refuses *Apples*, is generally civil to *Pears*, and *Crabs* mingled with them, make a rich and wholesome *Cider*, and has sometimes challenged even the best *Red-strake*.

27. Neither *Wheat*, *Leaven*, *Sulphur*, nor *Mustard*, are used but by very few; and therefore are not necessary to make *Cider* last well, for two, three, or four years.

28. The time of drawing *Cider* into *Bottles* is best in *March*, it being then clarified by the *Winter*, and free from the heat of the *Sun*.

29. In drawing, the best is nearest the heart or middle of the Vessel, as the *Telk* in the *Egg*.

30. *Red-strakes* are of divers kinds, but the name is in *Herefordshire* appropriated to one kind, which is fair and large, of a high purple colour, the smell *Aromatical*, the Tree a very shrub, soon

soon bearing a full burden, and seldom or never failing till it decays; which is much sooner than other *Apple-trees*. 'Tis lately spread all over *Hereford-shire*; and he that computes speedy return, and true *Wine*, will think of no other *Cider-Apple*, till a better be found.

31. I said the *Red-strake* is a small *shrub*, 'tis of small growth where the *Cider* proves richest, for ought we have yet seen in *Herefordshire*, viz. in light quick land; and if the land be very dry, jejune and shallow, that and other *Cider-fruit* (especially the *Genet-moyle*) will suspend the store of fruit alternatively every other year; except some *Blasts* or surprising *Frosts* in the *Spring* alter that *Method*; for two bad years seldom come together, very hardly three.

32. In good soil, I mean of *common field* (for fat land is not best for *Cider-fruit*, but common *arable*) I have seen the *Trees* of good growth, almost equalling other *Cider-trees*, the *Apple* larger and seldom failing of a good *burthen*: thus in the *Vales* of *Wheat-lands*, in strong *Glebe* or *Clay*, where the *Cider* is not so much extolled: but still *Sack* is *Sack*, and *Canary* differs from *Claret*; so does the *Red-strake-Cider* of the *Vale* excell any other *Cider* of the forefaid soil, such as is already celebrated for its kindness to good *Cider*.

33. Yet this distinction of *Soil* requires much *experience*, and great heed, if we insist upon accurate directions; for as *Lauremberg* saith, *in pingui solo non feruntur omnia rectè, neq; in macro nihil*. And for *Gardens*, *Flowers*, and *Orchards*, I would chuse many times such lands as do not please the *Husbandman*, either for *Wheat* or sweet *Pasture*, which are his chief aims; and thus *Lauremberg*, *In Arida & tenui terra felicius proveniunt Ruta, Allium, Petroselinum, Crocus, Hyssopus, Capparis, Lupini, Satureia, Thymus; Arbores quoq; tenne & macilentum solum amant; itemq; frutices pleriq; Hujusmodi arbores sunt, Pomus, Pyrus, Cerasus, Prunus, Persica, Cotonea, Morus, Juglans, Corylus, Staphyloedendrum, Mespilus, Ornus, Castanea, &c. Frutices, scil. Vitis, Berberis, Genista, Juniperus, Oxycantha, Periclymenum, Rosa, Ribesium, Uva, Spina, Vaccinia, &c.*

34. But here also we must distinguish, that *Pears* will bear in a very *stony*, *hungry*, *gravelly* land, such as *Apples* will not bear in; and I have seen *Pears* bear in a tough binding hungry *Clay*, when *Apples* could not so well bear it (as the smooth rinds of the *Pear-trees*, and the *Mossie* and *canker'd rinds* of the *Apple trees* did prove) the *root* of a *Pear-tree* being it seems more able to pierce a stony and stiff ground. And *Cherries*, *Mulberries* and *Plums* can rejoyce in a richer soil, though by the smallness of the *Roots*, the shallower soil will suffice them: And the *Quinces* require a deeper ground, and will bear with some degrees of hungry land, if they be supplied with a due measure of *succulency*, and neighboring moisture; and the other *shrubs*, according to the smallness of their *roots*, do generally bear a thinner land. I have seen a *soil* so much too rank for *Apples* and *Plums*, that all their fruits from year to year were



always *worm-eaten*, till their lives were forfeited to the fire.

35. To take up from these *Curiosities*, the most useful result to our purpose; we have always found these *Orchards* to grow best, last longest, and bear most, which are frequently tilled for *Barley*, *Wheat*, or other *Corn*, and kept (by *Culture* and *seasonable rest*) in due strength to bear a full *crop*. And therefore, whereas the *Red-strake* might otherwise without much injury be planted at *fifteen* or *twenty* foot distance, and the best distance for other *Cider-fruit* hath heretofore been reputed *thirty*, or *two and thirty* foot; very good husbands do now allow in their largest *Inclosures* (as of 20, 40 or 100 *Acres*) *fifty* or *sixty* foot distance, that the *Trees* may not much hinder the *Plow*, and yet receive the benefit of *Compost*; and a *Horse-teem* well governed will (without any damage of danger) *plow* close to the *Trees*.

36. In such soil as is here required, namely of good *Tillage*, an *Orchard* of grafted *Red-strakes* will be of good growth, and good burthen, within *ten* or *twelve* years, and branch out with good store to begin an encouragement at three years *grafting*; and (except the land be very unkind) will not yield to any decay within *sixty* or *eighty* years, which is a mans age.

37. In some *sheets* I rendred many Reasons against Mr. *Austin* of *Oxford*, why we should prefer a peculiar *Cider-fruit*, which in *Herefordshire* are generally called *Musts*; (so we name both the *Apple* and the *Liquor*, and *Pulpe* as mingled together in the contusion) as from the Latine *Mustum*. *White-Musts* of divers kinds, *Red-cheek'd* and *Red-streak'd* *Musts* of several kinds, *Green-Musts* called also *Green-fillet*, and *Blew-spotted*: Why, I say, we should prefer them for *Cider*, before *Table-fruit*, as *Pepins*, *Pearmains*, &c. And I do still insist on them: 1. The *Liquour* of these *Cider-fruits* and of many kinds of austere fruit, which are no better than a sort of full succulent *Crabs*, is more sprightly, brisk and *winy*. For Essay, I sent up many *bottles* to *London*, that did me no discredit. Secondly, One bushel of the *Cider-fruit* yields twice or thrice as much liquor. Thirdly, The *Tree* grows more in three or four years than the others in ten years, as I oft times remarked. Fourthly, The *Tree* bears far greater store, and doth more generally escape *Blasts* and *Frosts* of the *Spring*. I might add, that some of these, and especially such *Pears*, as yield the best *Perry*, will best escape the hand of the *Thief*, and may be trusted in the open field.

38. By the *first*, *second* and *fourth* of these Reasons, I must exclude the *Gennet-Moyle* from a right *Cider-fruit*, it being dry and very apt to take frosty *blasts*; yet it is no *Table-fruit*, but properly a baking fruit, as the ruddy colour from the *Oven* shews.

39. I said that the right *Cider-fruit* generally called *Musts*, and deserving the Latine name *Mustum*, is of divers kinds; and I have need to note more expressly that there is a *Red-streak'd* *Must* (as I have often seen) but not generally known, that is quite differing from the famous *Red-strake*, being much less, somewhat oblong and like some of the white *Musts* in shape, and full of a very good *winy* liquor. I could willingly name the persons and place where the

the distinct kinds are best known : it was first shewed me by *John Nash* of *Ashperton* in *Herefordshire* ; and for some years they did in some places distinguish a *Red-strake*, as yielding a richer *Red-strak'd Cider* of a more *fulvous* or *ruddy* colour ; but this difference, as far as I could find, is but a choice of a better *insolated* or *ruddy* fruit of the best kind, as taken from the *South part* of the *Tree*, or from a *soil* that renders them richer. But my Lord *Scudamore's* is safely of the best sort ; and Mr. *Whingate* of the *Grange* in *Dimoc*, and some of *King's-capel*, do best know these and other differences, *Straked-Must*, *right Red-strake*, *red Red-strake*, &c.

40. The greenish *Must*, (formerly called in the *Language* of the *Country*, the *Green-fillet*) when the *Liquor* is of a kindly ripeness, retains a *greenness* equal to the *Rhenish-glass* ; which I note for them that conceive no *Cider* to be fit for use till it be of the *colour* of old *Sack*.

41. To direct a little more *caution*, for enquiry of the right *Red-strake*, I should give notice that some *Months* ago, Mr. *Philips* of *Mountague* in *Somersetshire*, shewed me a very fair large *Red-strake Apple*, that by smell and sight seemed to me and to another of *Herefordshire* then with me to be the best *Red-strake* ; but when we did cut it, and taste it, we both denied it to be *right* (the other with much more confidence than my self) but Mr. *Philips* making *Cider* of it, this week invited me to it, assuring that already it equals or resembles *High-country-Wines*. It had not such plenty of juice as our *Red-strakes* with us, and it had more of the pleasantness of *Table-fruit*, which might be occasioned, for ought I know, by the purer and quicker soil. This *Apple* is here call'd *Meriot-Tsnot*, and great store of them are at *Meriot*, a *Village* not far distant : Possibly, this *Meriot* may prove to be the *Red-strake* of *Somersetshire*, when they shall please to try it apart with equal diligence and constancy as they do in *Herefordshire* : This *fruit* is of a very lovely *hue*, and by some conceived to be of Affinity to the *Red-Jersey-Apple*, which is reported to *tinge* so deeply : In truth, there can hardly be a deeper *Purple*, than is our right *Herefordshire Red-strake*, having a few *streaks* towards the *Eye*, of a *dark* colour, or *Orange-tawny* intermingled : But, 'tis no wonder if an *Apple* should change its *Name* in travelling so far beyond the *Severn*, when even in this *Country*, most sorts of *Apples*, and especially, *Cider-fruit*, loseth the *Name* in the next *Village*.

42. I may now ask why we should talk of other *Cider-fruit* or *Perry*, if the best *Red-strake* have all the aforesaid pre-eminences of richer and more *winy* liquor, by half sooner an *Orchard*, more constantly bearing, &c. An *Orchard* of *Red-strakes* is commonly as full of fruit at *ten* years, as other *Cider-fruit* at *twenty* years, or as the *Pepin* and *Pearmain* at *thirty* or thereabout.

43. To this may be Answered, that all *soils* bear not *Apples*, and to some *soils* other *Apples* may be more kind, and if we be driven to *Perry*, much we may say both in behalf of the *Perry*, and of the *Pear*, of the *fruit*, and of the *Tree* ; It is the goodlier *Tree* for a *Grove*, to shelter a house and walks from *Summers heat* and *Win-*

ters cold Winds, and far more lasting; the pleasantest Cider-pear of a known name amongst them, is the Horse-pear. And it is much argued, whether the White-horse-pear, or the Red-horse-pear be the better; where both are best, within two Miles they differ in judgment. The Pear bears almost its weight of sprightly winy Liquor; and I always preferred the tawny or ruddy Horse-pear, and generally that colour in all Pears that are proper for Perry.

44. I rejected Palladius against the durableness of Perry; his words are, *Hyeme durat, sed primâ acescit æstate*, Tit. 25. Febr. possibly so of common Pears, and in hotter Countries; but from good Cellars I have tasted a very brisk lively and winy liquor of these Horse-pears during the end of Summer; and a Bosbury-pear I have named and often tryed, which without bottling, in common Hogsheads of vulgar and indifferent Cellars, proves as well pleasanter as richer the second year, and yet also better the third year. A very honest, worthy and witty Gentleman of that neighbourhood would engage to me, that in good Cellars, and in careful custody, it passeth any account of decay, and may be beightened to a kind of Aqua-vita. I take the information worthy the stile of our modern improvements.

The Pear-tree grows in common fields and wild stony ground; to the largeness of bearing one, two, three or four Hogsheads each year.

45. This Bosbury-tree, and such generally that bear the most lasting Liquor and winy, is of such unsufferable taste, that hungry Swine will not smell to it; or if hunger tempt them to taste, at first crush they shake it out of their mouths; (I say not this of the Horse-pear) and the Clowns call other Pears, of best Liquor, Choak-pears, and will offer money to such as dare adventure to taste them, for their sport; and their mouths will be more stupified than at the root of Wake-robin.

46. A row of Crab-trees will give an improvement to any kind of Perry; and since Pears and Crabs may be of as many kinds as there are kernels, or different kinds or mixtures of soils; in a general Character I would prefer the largest and fullest of all austere juices.

47. Mr. Lill of Mark-hill (aged about 90 years) ever observed this Rule, to graff no wild Pear-tree till he saw the fruit; if it proved large, juicy, and brisk, it failed not of good Liquor. But I see cause to say, that to graff a young tree with a riper graff, and known excellency, is a sure gain and hastens the return.

48. Mr. Speke (last high Sheriff of Somersetshire) shewed me in his Park some store of Crab-trees, of such huge Bulk, that in this fertile year he offered a wager, that they would yield one or two Hogsheads of Liquor each of them; yet were they small dry Crabs.

49. I have seen several sorts of Crabs (which are the natural Apple, or at worst but the Wild-Apple) which are as large as many sorts of Apples, and the Liquor winy.

50. I have disclaimed the Gust of Juniper-berries in Cider; I tried



tried it only *once* for *my self*, and drank it before *Christmas*: possibly in more time the relish had been subdued or improved, as of *Hops* in *stale Beer*, and of *Rennet* in good *Parmasan*. Neither was the *Gust* to me otherwise unpleasant than as *Annis-seeds* in *Bread*, rather *strange* than *odious*; and by custom made grateful, and it did hasten the *clarification*, and increase the briskness to an endless *sparkling*: thus it indulgeth the *Lungs*, and nothing more *cheap*; where *Juniper* grows, a *Girl* may speedily fill her lap with the *Berries*.

If *Barbadoes* Ginger be good, cheaper, and a more pleasant preserver of Beer, it must probably be most kind for *Cider*: For first, of all the improvers that I could name, bruised *Mustard* was the best; and this *Ginger* hath the same quick, mordicant vigour, in a more noble and more *Aromatique* fragrancy. Secondly, *Cider*, (as I oft complain) is of a sluggish and somewhat windy nature; and for some *Months* the best of it is chain'd up with a cold *ligature*, as we fancy the fire to be lock'd up in a cold *Flint*. This will relieve the *prisoner*. And thirdly, will assist the *winy* vigour for them that would use it instead of a sparkling *Wine*. Fourthly, 'Tis a good sign of much kindness, and great friendship: it will both enliven the *ferment* for speedier maturity, and also hold it out for more duration, both which offices it performs in Beer.

51. *Cider* being *windy* before maturity, some that must not wait the leisure of best *Season* do put sprigs of *Rosemary* and *Bays* in the *Vessel*; the *first* good for the *head*, and not unpleasant; the *second*, an *Antidote* against *Infections*; but less pleasant till time hath incorporated the *Tastes*.

52. And why may we not make mention of all these *Mixtures*, as well as the *Ancients* of their *Vinum Marrubii*, *Vinum Abrotanites*, *Absynthites*, *Hyssopites*, *Marathites*, *Thymites*, *Cydonites*, *Myrtites*, *Scillites*, *Violaceum*, *Sorbi*, &c.

53. And, for *mixtures*, I think we may challenge the *Ancients*, in naming the *Red-raspy*; of which there is in this County a *Lady* that makes a *Bonella*, the best of *Summer drinks*. And more yet if we name the *Clove-july-flower*, or other *July-flowers*, a most grateful *Cordial*, as it is infused by a *Lady* in *Staffordshire*, of the Family of the *Devereux's*, and by some *Ladies* of this Country.

54. I could also give some account of *Cherry wine*, and *Wine of Plums*; the last of which (in the best Essay that I have yet seen) is hardly worthy to be named: But, I conceive, and have ground for it, that some good *Liquor* and *Spirits* may be drawn from some sorts of them, and in *quantity*: And the vast store of *Cherrys* in some places, under a *peny* the *pound*, and of *Plums* that bend the *Trees* with their *burdens*, and their expedite growth makes it cheap enough; and as in the other, so in these, the large *English* or *Dutch sharp Cherry*, makes the *Cherry-wine*; and the full black, tawny *Plum*, as big as a *Walnut* (not the kind of *Heart-Cherries*, nor the *Plum* which divides from the *stone*) make the *Wine*. Their cheapness should recommend them to more general use at *Tables*, when dried like *Prunellas* (an easie art) and then wholsomer.

55. To return for *Red-brake*; 'tis a good drink as soon as well fermented, or within a *Month*, better after some *Frosts*, and when clarified; rich *Wine*, when it takes the colour of old sack. In a good *Cellar* it improves in *Hogsheads* the second year; in *Bottles* and *sandy Cellars* keeps the *Records* of late revolutions and old *Majoralties*. Quære the manner of laying them up in *sand-houses*.

56. I tried some *Bottles* all the *Summer* in the bottom of a *Fountain*; and I prefer that way where it may be had. And 'tis somewhat strange if the Land be neither dry for a *sand-house*, nor *fountains* for this better expedient. When *Cider* is settl'd, and altogether, or almost clarifi'd, then to make it *sprightly* and *winy*, it should be drawn into well cork'd and well bound *bottles*, and kept some time in *sand* or *water*; the longer the better, if the kind be good. And *Cider* being preserved to due age, bottl'd (and kept in cool places, *conservatories*, and *refrigerating* springs) it does almost by time turn to *Aqua-vitæ*; the *Bottles* smoak at the opening, and it catches *flame* speedily, and will burn like *spirit of Wine*, with a fiery taste; and it is a laudable way of trying the vigour of *Cider* by its promptness to burn, and take fire, and from the quantity of *Aqua-vitæ* which it yields. *Cider* affords by way of *Distillation*, an incomparable and useful *spirit*, and that in such plenty, as from four *Quarts*, a full *Pint* has been extracted.

57. I must not prescribe to other *Palats*, by asserting to what degree of *Perfection* good *Cider* may be raised, or to compare it with *Wines*: But when the late *King* (of blessed memory) came to *Hereford* in his distress, and such of the *Gentry* of *Worcestershire* as were brought thither as *Prisoners*; both *King*, *Nobility*, and *Gentry*, did prefer it before the best *Wines* those parts afforded; and to my knowledge that *Cider* had no kind of *Mixture*. Generally all the *Gentry* of *Herefordshire* do abhor all mixtures.

Yet if any man have a desire to try *conclusions*, and by an harmless *Art* to convert *Cider* into *Canary-wine*; let the *Cider* be of the former year, *Masculine* and in full-body, yet pleasant and well tasted: into such *Cider* put a *spoonful*, or so, of the *spirit of Clary*, it will have so much of the race of *Canary*, as may deceive some who pretend they have discerning *Palats*.

Sir PAUL NEIL'S  
DISCOURSE  
OF  
CIDER.

My Lord,

**I**N obedience to the *Commands* of this *Honourable Society*, I have at length endeavour'd to give this brief *Account* of that little which I know concerning the *Ordering* of *Cider*; and in *that* I shall propound to my self *six* things.

*First*, To shew that *Cider* made of the best *Eating-Apples* must needs be *once* the best; (that is to say) the pleasantest *Cider*.

*Secondly*, That hitherto the general opinion hath been otherwise, and that the reason of that mistake was the not apprehending the true cause why the *Pepin-cider* &c. did not retain its sweetness, when the *Hard-apple-cider* did.

*Thirdly*, What is the true cause that *Pepin-cider*, used in the ordinary method, will not retain its sweetness.

*Fourthly*, How to cure that *evil* in *Pepin-cider*.

*Fifthly*, A probable conjecture how in some degree by the same *Method* to amend the *Hard-apple-cider*, and *French-Wine*.

*Sixthly*, That what is here propounded cannot chuse but be *wholsome*, and may be done to what degree every mans *Palate* shall wish.

Having now told your *Lordship*, what I will endeavour to do before I enter upon it, I must declare what I will not in the least pretend to do.

I. I do not pretend to any thing concerning the *planting* and *grafting* of *Trees*, &c.

Nor what *Trees* will soonest bear or last longest.

Nor what *sorts* of *Trees* are the best *bearers*, and may with least danger grow in *common fields*.

Nor what *sort* of *fruit* will yield the greatest store of *Cider*.

Nor what *Cider* will keep the longest, and be the strongest, and wholestome to *drink* constantly with *meat*.

The only thing I shall endeavour being to prescribe a way to make a sort of *Cider* pleasant and quick of taste, and yet whole-

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some



som to *drink*, sometimes, and in a moderate proportion: For, if this be an *Heresse*, I must confess my self guilty; that I prefer *Canary-wine*, *Verdea*, the pleasantest *Wines* of *Greece*, and the *High-country-wines* before the *harsh Sherries*, *Vin de Hermitage*, and the *Italian* and *Portugal* rough *Wines*, or the best *Graves-wines*; not at all regarding that I am told, and do believe, that these *harsh wines* are more comfortable to the *stomach*, and a *Surfeit* of them less *noxious*, when taken; nor to be taken but with drinking greater quantities than can with safety be taken of those other pleasant *Wines*: I satisfying my self with this, that I like the pleasant *Wines* best; which yet are so wholesom, that a man may drink a moderate quantity of them without prejudice.

Nor shall I at all concern my self, whether this sort of *Cider* I pretend to is so *vinous* a liquor; and consequently will yield so much *spirit* upon *Distillation*, or so soon make the *Country-man* think himself a *Lord*, as the *Hard-apple-cider* will do: nor whether it will last so long; for it is no part of my *design* to perswade the *World* to lay by the making of *Hard-apple-cider*; but rather in a degree to shew how to improve that in point of pleasantness, and that by the making and rightly ordering of *Cider* of the best *Eating-Apples*, as *Golden-pepins*, *Kentish-pepins*, *Pear-mains*, &c. there may be made a more pleasant liquor for the time it will last, than can be produced from those *Apples* which I call *Hard-Apples*, that is to say, *Red-strakes*, *Gennet-moyles*, the *Bromsbury-Crab*, &c. which are so *harsh* that a *Hog* will hardly eat them.

Nor shall I at all meddle with the making of *Perry*, or of any mixed drink of the juyce of *Apples* and *Pears*; though possibly what I shall say for *Cider* may be aptly applied to *Perry* also.

For the first particular, I asserted that the best *Apples* would make the pleasantest, which in my sence is the best *Cider*; (and I account those the best *Apples*, whose juyce is the pleasantest at the time when first pressed, before fermentation) I shall need (besides the experience of the last ten years) only to say, that it is an undeniable thing in all *Wines*, that the pleasantest *Grapes* make the richest and pleasantest *Wines*; and that *Cider* is really but the *Wine* of *Apples*, and not only made by the same way of *Compressi-on*; but left to it self hath the same way of *Fermentation*; and therefore must be liable to the same measures in the choice of the materials.

To my second *Affertion*, that this truth was not formerly owned, by reason that in *Herefordshire*, and those Countries where they abound both with *Pepins* and *hard-apples* of all sorts, they made *Cider* of both sorts, and used them alike; that is, that as soon as they ground and pressed the *Apples* and strained the *Liquor*, they put it into their *Vessels*, and there let it lye till it had wrought; and afterwards was settled again and *fined*; as not thinking it wholesom to drink till it had thus (as they call it) *purg'd* it self, and this was the frequent use of most men in the more *Southern* and *Western* parts of *England* also. Now when *Cider* is thus used,

it is no wonder that when they came to broach it, they for the most part found their *Pepin-cider* not so pleasant as their *Moyle* or *Red-strake-cider*; but to them it seemed a wonder, because they did not know the *reason* of it (which shall be my next work to make out) for till they knew the *reason* of this effect, they had no cause but to think it was the nature of the several *Apples* that produced it; and consequently to prefer the *Hard-apple-cider*, and to use the other Apples (which were good to eat *raw*) for the *Table*: which was an use not less necessary, and for which the *hard-apples* were totally improper.

To my *third* Assertion, which is, that in *Herefordshire* they knew not what was the true cause why their *Pepin-cider* (for by that name I shall generally call all sorts of *Cider* that is made of *Apples* good to eat *raw*) was not, as they used it, so good as the *Cider* made of *hard-apples* (for by that name, for brevities sake, I shall call the *Cider* of *Moyle*, *Red-strake*, and all other sorts of *harsh Apples*, not fit to eat *raw*.) First, I say, for all *liquors* that are *Vinous*, the cause that makes them sometimes harder or less pleasant to the taste, than they were at the first pressing, is the too much *fermenting*: If *Wine* or *Cider* by any *accidental* cause do *ferment* twice, it will be harder than if it had *fermented* but once; and if it *ferment* thrice, it is harder and worse than if it had *fermented* but twice: and so onward, the oftener it *ferments* and the longer it *ferments*, it still grows the harder. This being laid as a *foundation*, before we proceed further we must first consider what is the cause of *fermentation* in *Wine*, *Cider*, and all other *Vinous Liquors*. Which (in my poor opinion) is the gross part of the *Liquor*, which escapes in the straining of the *Cider* (for in making of *Wine* I do not find that they use the curiosity of straining) and which is generally known by the name of the *Lee* of that (*Wine* or) *Cider*. And this *Lee* I shall, according to its thickness of parts, distinguish into the *gross Lee*, and the *fly-ing Lee*.

Now, according to the old method of making and putting up of *Cider*, they took little care of putting up *only* the clear part of the *Cider* into their Vessels or *Cask*; but put them up thick and thin together, not at all regarding this *separation*; for experimentally they found that how thick soever they put it up, yet after it had thoroughly wrought or *fermented* and was settled again, it would still be clear; and perchance that which was put up the soonest after it was pressed and the thickest, would, when the *fermentation* was over, be the clearest, the briskest, and keep the longest. This made them confidently believe that it was not only not inconvenient to put it up quickly after the *pressing*, but in some degree necessary also to put it up soon after the *pressing*, so that it might have so much of the *Lee* mixed with it, that it might certainly, soon, and strongly put it into a *fermentation*, as the only means to make it *wholsom*, *clean* and *brisk*; and when it either did not (or that they had reason to doubt that it would not) work or *ferment* strongly enough, they had used to put in

*Mustard* or some other thing of like nature to increase the fermentation.

Now that which in *Cider* of *Pepins* hath been a cause of greater fermentation than in *Cider* of *Hard-Apples*, being both used after the former method, is this, that the *Pepins* being a softer fruit are in the *Mill* bruised into smaller particles than the harder sorts of *Apple*; and consequently more of those small parts pass the strainer in the *Pepin-cider* than in the *Cider* of *Hard-apples*, which causeth a stronger fermentation, and (according to my former principle) a greater loss of the native sweetness than in that of *Hard-apple-cider*; and not only so, but the *Lee* of the *Hard-apple-cider* being compounded of greater particles than the *Lee* of the *Pepin-cider*, every individual particle is in it self of a greater weight than the particles of the *Lee* of the *Pepin-cider*; and consequently less apt to rise upon small motions, which produceth this effect; that when the fermentation of the *Hard-apple-cider* is once over, unless the Vessel be stirred, it seldom falls to a second fermentation; but in *Pepin-cider* it is otherwise: For if the gross *Lee* be still remaining with the *Cider*, it needs not the motion of the Vessel to cause a new fermentation, but every motion of the *Air* by a change of weather from dry to moist will cause a new fermentation, and consequently make it work till it hath destroyed it self by losing its native sweetness. And this alone hath been the cause, why commonly when they broach their *Pepin-cider* they find it so unpleasant, that generally the *Hard-apple-cider* is preferred before it, although at first it was not so pleasant as the *Pepin-cider*. Yet after this mischief hath prevailed over the *Pepin-cider*, it is no wonder to find the *Hard-apple-cider* remaining not only the stronger, but even the more pleasant tasted. This to me seems satisfactory for the discovery of the cause, why in *Herefordshire* the *Hard-apple-cider* is preferred before the *Pepin-cider*. But perhaps it may by some be objected, that they have before the ten years, in which you pretend you found this to be the cause of spoiling the *Pepin-cider*, been in *Herefordshire*, and tasted the best *Cider* that *Country* did afford; and yet it was not like the *Pepin-cider* they had before then tasted in other parts. To this I do answer, at present, briefly, that by some mistake, or chance, the maker of this *Pepin-cider*, which proved good, had done that, or somewhat like that, which under the next Assertion I shall set down, as a *Method* to cure the inconveniences which happen to *Pepin-cider*, by the suffering it to ferment too often, or too strongly; but till that be explained it would be improper to shew more fully what these particular accidents might possibly be, which (without the intention of those persons which made the *Cider*) caused it to prove much better than their expectation, or indeed better than any could afterwards make: they possibly assigning the goodness of that *Cider* to somewhat that was not really the cause of that effect.

To justify my fourth Assertion, and shew a *Method* how to cure the inconveniency which happens to *Pepin-cider* by the over-working,



ing, I must first take notice of some things which I have been often told concerning *Wine*, and which indeed gave me the light to know what was the *cause* which had made *Pepin-cider* that had wrought long, *hard* when it came to be *clear* again. The thing I mean, is, that in divers *parts*, and even in *France* they make *three sorts* of *Wine* out of one and the same *Grapes*; that is, they first take the *juice* of the *Grapes* without any more pressing than what comes from their own weight in the *Vat*, and the bruising they have in putting into the *Vessel*, which causeth the ripest of those *Grapes* to break, and the *juice* without any pressing at all makes the pleasantest and most delicate *Wine*: And if the *Grapes* were *red*, then is this first *Wine* very *pale*. The second sort they press a little, which makes a *redder Wine*, but neither so pleasant as the first, nor so harsh as the last, which is made by the utmost pressing of the very *skins* of the *Grapes*, and is by much more harsh, and of deeper colour than either of the other two. Now I presume the *cause* of this (at least in part) to be, that in the first sort of *Wine*, which hath little of the substance, beside the very *juice* of the *Grape*, there is little *Lee*, and consequently little *fermentation*; and because it doth not work long, it loseth but little of the original sweetness it had: The second sort being a little more pressed hath somewhat more of the substance of the *Grape* added to the *juice*; and therefore having more of that part which causeth *fermentation* put with it, *ferments* more strongly, and is therefore, when it hath done working, less pleasant than the first sort, which wrought less. And for the same reason the *third sort* being most of all pressed, hath most of the substance of the *Grape* mingled with the *Liquor*, and worketh the longest: but at the end of the working when it *settles* and is *clear*, it is much more harsh than either of the two first sorts. The thought of this made me first apprehend that the *substance* of the *Apple* mingled with the *juice*, was the cause of *fermentation*, which is really nothing else but an endeavour of the *Liquor* to free it self from those *Heterogeneous* parts which are mingled with it: And where there is the greatest proportion of those *dissimilar* parts mingled with the *Liquor*, the endeavour of *Nature* must be the stronger; and take up more time to perfect the *separation*: which when finished leaves all the *Liquor* clear, and the gross parts settled to the bottom of the *Vessel*; which we call the *Lee*. Nor did this apprehension deceive me; for when I began (according to the *Method* which I shall hereafter set down) to separate a considerable part of the *Lee* from the *Cider* before it had *fermented*, I found it to retain a very great part of its original sweetness, more than it would have done if the *Lee* had not been taken away before the *fermentation*; and this not once, but constantly for *seven years*.

Now the *Method* which I used, was this: When the *Cider* was first strained, I put it into a great *Vat*, and there let it stand *twenty four hours* at least (sometimes more, if the *Apples* were more ripe than ordinary) and then at a *tap* before prepared in the *Vessel* three or four *inches* from the bottom I drew it into *pails*, and from thence

thence filled the *Hoghead* (or lesser *Vessel*) and left the greatest part of the *Lee* behind; and during this time that the *Cider* stood in the *Vat*, I kept it as close covered with *hair-cloths* or *sacks* as I could; that so too much of the *spirits* might not evaporate.

Now possibly I might be asked why I did not, since I kept it so close in the *Vat*, put it at first into the *Vessel*; To which I answer, that had I put it at first into the *Vessel*, it would possibly (especially if the *weather* had chanced to prove wet and warm) have begun to ferment before that time had been expired; and then there would have been no possibility to have separated any part of the *gross Lee*, before the *fermentation* had been wholly finished; which keeping it only covered with these cloths was not in danger: For, though I kept it warm in some degree, yet some of the *spirits* had still liberty to evaporate; which had it been in the *Hoghead* with the *Bung* only open, they would not so freely have done; but in the first 24 *hours* it would have begun to ferment, and so my design had been fully lost: For those *spirits* if they had been too strongly reverberated into the *Liquor*, would have caused a *fermentation* before I could have taken away any part of the *gross Lee*. For the great *mystery* of the whole thing lies in this, to let so many of the *spirits* evaporate, that the *liquor* shall not ferment before the *gross Lee* be taken away; and yet to keep *spirits* enough to cause a *fermentation* when you would have it. For if you put it up as soon as it is strained, and do not let some of the *spirits* evaporate, and the *gross Lee* by its weight only to be separated without *fermentation*, it will ferment too much and lose its sweetness; and if none be left, it will not ferment at all; and then the *Cider* will be dead, flat and soure.

Then after it is put into the *Vessel*, and the *Vessel* fill'd all but a little (that is, about a *Gallon* or thereabout) I let it stand (the *Bung-hole* being left only covered with a *paper*, to keep out any dust or filth that might fall in) for 24 *hours* more; in which time the *gross* part of the *Lee* being formerly left in the *Vat*, it will not ferment, but you may draw it off by a *Tap* some two or three inches from the bottom of the *Vessel*, and in that second *Vessel* you may stop it up, and let it stand safely till it be fit to *Bottle*; and possibly that will be within a day or more: but of this time there is no certain measure to be given; there being so many things that will make it longer, or less while before it be fit to *bottle*. As for *Example*, If the *Apples* were *over-ripe* when you stamped them, or ground them in the *Mill*, it will be the longer before it will be clear enough to *Bottle*; or if the *weather* prove to be warmer or moister than ordinary: or that your *Apples* were of such kinds, as with the same force in the stamping or grinding they are broken into smaller *particles* than other *Apples* that were of harder kinds.

Now, for knowing when it is fit to *Bottle*, I know no certain *Rule* that can be given, but to broach the *Vessel* with a small *Piercer*, and in that *hole* fit a *peg*, and now and then (two or three times in a day) draw a little, and see what fineness it is of; for when it is bottled it must not be perfectly *sine*; for if it be so, it will not fret in the

the *bottle*, which gives it a fine quickness, and will make it *mantle* and sparkle in the *glass*, when you pour it out: And if it be too thick when it is *bottled*, then, when it hath stood some time in the *bottles* it will *ferment* so much that it may possibly either drive out the *Corks*, or break the *bottles*, or at least be of that sort (which some call *Potgun-drink*) that when you open the *bottles* it will fly about the house, and be so *windy* and *cutting* that it will be inconvenient to drink: For the right *temper* of *Bottle-Cider* is, that it *mantle* a little and *sparkle* when it is put out into the *glass*; but if it *froth* and *fly*, it was *bottled* too soon: Now the *temper* of the *Cider* is so nice, that it is very hard when you *bottle* it to foretel which of these two conditions it will have: but it is very easie within a few days after (that is to say, about a *week*, or so) to find its *temper* as to this point. For first, if it be *bottled* too soon; by this time it will begin to *ferment* in the *Bottles*, and in that case you must open the *Bottles*, and let them stand open two or three *minutes*, that that abundance of *spirits* may have *Vent*, which otherwise kept in would in a short time make it of that sort I called before *Potgun-drink*; but being let out, that danger will be avoided, and the *Cider* (without danger of breaking the *bottles*) will *keep* and *ferment*, but not too much. Now this is so easie a *remedy*; that I would advise all men rather to err on the hand of *bottling* it too soon, than let it be too *fine* when they *bottle* it; for if so, it will not *ferment* in the *bottle* at all; and consequently, want that *briskness* which is desirable.

Yet even in this case there is a *Remedy*, but such a one as I am always very careful to avoid, that so I may have nothing (how little soever) in the *Cider* but the *juice* of the *Apple*: But the *remedy* is, in case you be put to a necessity to use it, that you open every *bottle*, after it hath been *bottled* about a week or so, and put into each *bottle* a little piece of *white sugar*, about the bigness of a *Nutmeg*, and this will set it into a little *fermentation*, and give it that *briskness* which otherwise it would have wanted. But the other way being full as easie, and then nothing to be added but the *juice* of the *Apple* to be simply the substance of your *Cider*, I chuse to prefer the error of being in danger to *bottle* the *Cider* too soon, rather than too late: Nay sometimes in the *bottling* of one and the same *Hogsh-head* (or other *Vessel*) of *Cider*, there may the first part of it be too *fine*; the second part *well*; and the last not *fine* enough: and this happens when it is *broached* first *above* the *middle*, and then *below*; and then when it begins to run low, *tilted* or *raised* at the further end, and so all drawn out. But to avoid this inconvenience, I commonly set the *bottles* in the order they were filled, and so we need not open all to see the condition of the *Cider*; but trying one at each end, and one in the middle, will serve the turn: And to prevent the inconveniency, *broach* not at all *above* the *middle*, nor too *low*; and when you have drawn all that will run at the *Tap*, you may be secure it is so far of the same *temper* with the first *bottle*. And then *tilt* the *Vessel*; but draw no more in three or four hours at the least after, and set them by themselves, that so, if you please, you



you may three or four days after pour them off into other bottles, and leave the *gross* behind: And by this means though you have a less number of bottles of Cider than you had, yet this will continue good, and neither be apt to *fly*, nor have a *sediment* in the bottle, which after the first glass is filled will render all the rest of the bottle thick and muddy.

By all this which I have said, I think it may be made out that those persons which I mentioned in the end of the last Paragraph, that sometimes had *Pepin-cider* better than ordinary, and indeed than they could make again, were beholding to chance for it; either that their Apples were not so full ripe at that as at other times, and so not bruised into so small parts; but the fermentation was ended in the Vessel, and the *Lee* being then *gross* settled before the Cider had fermented so long as to be hard.

Or else, by some Accident they had not put it so soon into the Vessel, but that in part it was settled before they put it up, and the grossest part of the *Lee* left out of the Vessel.

Or else, the Bung being left open some part of the spirits evaporated; and that made the fermentation the weaker, and to last the less time.

Or else, they put it up in such a season that the weather continued cold and frosty till the fermentation was quite over; and then it having wrought the less time, and with the less violence, it remained more pleasant and rich than otherwise it would have done.

Now for the time of making *Pepin-cider*, I chuse to do it in the beginning of November, after the Apples had been gathered and laid about three weeks or more in the loft, that so the Apples might have had a little time to sweat in the house before the Cider was made, but not too much; for if they be not full ripe before they be gathered, and not suffered to lie a while in the heap, the Cider will not be so pleasant; and if they be too ripe when they are gathered, or lye too long in the heap, it will be very difficult to separate the Cider from the gross *Lee* before the fermentation begins: and in that case it will work so long, that when it *finer*, the Cider will be hard; for when the Apples are too mellow, they break into so small Particles, that it will be long before the *Lee* settles by its weight only: and then the fermentation may begin before it be separated, and so destroy your intention of taking away the gross *Lee*. And if the Apples be not mellow enough, the Cider will not be so pleasant as it ought to be.

This being said for the time of making the *Pepin-Cider*, may (*mutatis mutandis*) serve for all other sorts of Summer-fruit; as the *Kentish-codling*, *Marigolds*, *Gilly-flowers*, *Summer-pear-mains*, *Summer-pepins*, *Holland-pepins*, *Golden-pepins*, and even *Winter-pear-mains*. For though they must not be made at the same time of the year, yet they must be made at the time when each respective fruit is in the same condition that I before directed that the *Winter-pepin* should be, Nay, even in the making of that Cider, you are not tied to that time of the year to make your Cider; but as the condition of that particular year hath been, you may make your

your *Cider* one, two, three or four weeks later; but it will be very seldom that you shall need to begin to make *Kentish-pepin-Cider* before the beginning of *November*, even in the most *Southern* parts of *England*.

The next thing I shall mention, is, the ordering of your *bottles* after they are *filled*; for in that consists no small part of causing your *Cider* to be in a just condition to *drink*: For, if it does *ferment* too much in the *bottle*, it will not be so convenient to *drink*, neither for the taste, nor wholesomeness; and if it *ferment* not at all, it will want that little *fret* which makes it *grateful* to most *Palates*. In order to this, you must observe, first, whether the *Cider* were *bottled* too early, or too late, or in the just time: If too early, and that it hath too much of the *flying Lee* in it, then you must keep it as cool as you can, that it may not work too much, and if so little that you doubt it will not work at all, or too little; you must by keeping it from the inconvenience of the external *air*, endeavour to hasten and increase the *fermentation*. And this I do, by setting it in *sand* to cool, and by covering the *bottles* very well with *straw*, when I would hasten or increase the *fermentation*.

And if I find the *Cider* to have been *bottled* in its just time, then I use *neither*, in ordinary weather; but content my self that it stands in a close and cool *Cellar*, either upon the *ground*, or upon *shelves*; saving in the time that I apprehend *frost*, I cover it with *straw*, which I take off as soon as the *weather* changeth; and consequently about the time that the cold *East winds* cease; which usually with us, is in the beginning of *April*; I set my *bottles* into *sand* up to the necks. And by this means I have kept *Pepin-cider* without change till *September*, and might have kept it longer, if my store had been greater: For by that time the heats were totally over; and consequently, the *cause* of the *turn* of *Cider*.

Having now declared what is (according to my opinion) to be done to preserve *Cider*, if not in its original sweetness, yet to let it lose as little as is possible; I shall now fall upon my *fifth Assertion*, which is, that it is probable that somewhat like the former *Method* may in some degree mend *Hard-Apple-cider*, *Perry*, or a drink made of the mixtures of *Apples* and *Pears*; and not impossible that somewhat of the same nature may do good to *French-wines* also.

First, for *French-wines*, I think what I have in the beginning of this *discourse* declared, as the hint which first put me upon the conceit, that the over-fermenting of *Cider* was the cause that it lost of its original sweetness (*viz.* the making of *three* sorts of *Wine*, of one sort of *Grapes*) is a testimony that the first sort of *Wine* hath but little of the *gross Lee*, and consequently, *ferments* but little; nor loseth but little of the original sweetness; which makes it evident that the same thing will hold in *Wine*, which doth in *Cider*; but the great difficulty is (if I be rightly informed) that they use to let the *Wine* begin to *ferment* in the *Vat* before they put it into the *Hogheads* or other *Vessels*; and thus they do, that the *Husks* and other *Filth* (which in the way they use, must ne-

cessarily be mingled with the *Wine*) may rise in a *scum* at the top, and so be taken off: Now if they please, as soon as it is *pressed*, to pass the *Wine* through a *strainer*, without expecting any such *purgation*, and then use the same *Method* formerly prescribed for *Cider*, I do not doubt but the gross part of the *Lee* of *Wines*, being thus taken away, there will yet be enough left to give it a *fermentation* in the *bottles*, or second *vessel*, where it shall be left to stand, in case you have not *bottles* enough to put up all the *Wine* from which you have thus taken away the gross *Lee*.

This *Wine* I know not whether it will last so long as the other used in the ordinary way, or not; but this I confidently believe, it will not be so harsh as the same would have been if it had been used in the ordinary way; and the pleasantness of *Taste*, which is not unwholesome, is the chief thing which I prefer both in *Wine* and *Cider*.

Now for the *Hard-apple-Cider*, that it will receive an improvement by this way of ordering, hath been long my opinion; but this year an accident happened, which made it evident that I was not mistaken in this conjecture. For there was a *Gentleman* of *Herefordshire*, this last *Autumn*, that by accident had not provided *Cask* enough for the *Cider* he had made; and having six or seven *Hogheads* of *Cider* for which he had no *Cask*, he sent to *Worcester*, *Glocester*, and even to *Bristol*, to buy some, but all in vain; and when his *servants* returned, the *Cider* that wanted *Cask* had been some five days in the *Vat* uncovered; and the *Gentleman* being then dispatching a *Barque* for *London* with *Cider*, and having near hand a conveniency of getting *Glass-bottles*, resolved to put some of it into *bottles*; did so, and filled seven or eight *Hampers* with the clearest of this *Cider* in the *Vat*, which had then never wrought, nor been put into any other *Vessel* but the *Vat*; the *Barque* in which his *Cider* came had a tedious passage; that is, it was at least seven weeks before it came to *London*, and in that time most of his *Cider* in *Cask* had wrought so much that it was much harder than it would have been if it had according to the ordinary way lain still in the *Country*, in the place where it was first made and put up, and consequently, wrought but once.

But the other, which was in *Bottles*, and escaped the breaking, that is, by accident, had less of the *Lee* in it than other *bottles* had, or was not so hard stopped, but either before there was force enough from the *fermentation* to break the *bottle*, or that the *Cork* gave way a little, and so the *air* got out; or that the *Bottles* were not originally well *corked*, was excellent good, beyond any *Cider* that I had tasted out of *Herefordshire*; so that from this *Experience* I dare confidently say, that the using *Hard-apple-cider* after the former *Method*, prescribed for *Pepin-cider*, will make it retain a considerable part of sweetness more than it can do after the *Method* used hitherto in *Herefordshire*. Nor do I doubt but my *Method* will in a degree have the same effect in *Perry*, and the drink (as yet without a name that I do know of) which is made of the *Juice* of *Wardour*, *Pears*, and *Apples*, by several persons, in several proportions;



portions; for the *Reason* being the same, I have no cause to doubt, but the *effect* will follow, as well in those *Drinks* as in *Cider* and *Wines*.

I am now come to my last *Affertion*; that *Cider* thus used cannot be *unwholsom*, but may be done to what degree any mans *Palate* desires.

*First*, It cannot be *unwholesome*, upon the same measure that *stummmed Wine* is so; for that unwholesomeness is by leaving the cause of *fermentation* in the *Wine*, and not suffering it to produce its *effect* before the *Wine* be drank, and it *ferments* in mans body: and not only so, but sets other *humours* in the body into *fermentation*; and this prejudiceth their *health* that drink such *Wines*.

Now though *Cider* used in my *method* should not *ferment* at all, till it come into the *bottle*, and then but a little; yet the cause of *fermentation* being in a great degree taken away, the rest can do no considerable harm to those which drink it, being in it self but little, and having wrought in the *bottle* before men drink it; nor indeed do I think, nor ever find, that it did any inconvenience to my self, or any person that drank it when it was thus used.

*Secondly*, because the difference of mens *palates* and *constitutions* is very great; and that accordingly men like or dislike drink that hath more or less of the *fret* in it; and that the consequences in point of health are very different, in the *method* by me formerly prescribed: it is in your *power* to give the *Cider* just as much *fret* as you please, and no more; and that by several ways: for either you may *bottle* it sooner or later, as you please: or you may *bottle* it from two *Taps* in your *Vessel*, and that from the *higher Tap* will have less *fret*, and the *lower* more: or you may *bottle* your *Cider* all from one *Tap*, and open some of the *bottles* about a week after for a few *minutes*, and then stop them up again; and that which was thus stop'd will have the less *fret*: or, if your *Cider* be *bottled* all from one *Tap*, if you will (even without opening the *bottles*) you may make some difference, though not so considerable as either of the former ways, by keeping part of the *bottles* warmer, for the first two *Months*, than the rest; for that which is kept warmest will have the most *fret*.

## Sir PAUL NEILE's second Paper.

My Lord,

THE Paper which by the Command of the *Royal Society* I delivered in the last year, concerning the ordering of *Cider*, I have by this years experience found defective in one particular, of which I think fit by this to give you notice, which is thus: Whereas in the former Paper I mention, that after the *Pepin-Cider* hath stood 24 hours in the *Vat*, it might be drawn off into Pails, and so put into the Vessel; and that having stood a second 24 hours in that Vessel, it might be drawn into another Vessel, in which it might stand till it were fit to *Bottle*; for the particulars of all which proceeding I refer to the former Paper; and shall now only mention, That this last year we were fain to draw it off into several Vessels, not only as is there directed, *twice*, but most of our *Cider* five, and some *six* times; and not only so, but we were after all this fain to *precipitate* the *Lee* by some of those ways mentioned by Dr. *Willis* in the 7th *Chap.* of his Treatise *De fermentatione*. Now though this be more of trouble than the Method by me formerly mention'd; yet it doth not in the least destroy that *Hypothesis* which in the former Discourse I laid down, (*viz.*) That it was the leaving too much of the *Lee* with the *Cider*, which upon the change of air, set it into a new *fermentation*, and consequently made it lose the sweetness; for this change by the indisposition of the *Lee* to settle this year more than others, hath not hindred the goodness of the *Cider*; but that when it was at last mastered, and the *Cider* bottled in a fit temper, it was never more pleasant and quick than this year: but I find that this year our *Cider* of Summer-Apples is already turned sowre, although it be now but the first of *January*; and the last year it kept very well till the beginning of *March*; which makes me fear that our *Pepin-Cider* will not keep till this time twelve-month, as our *Pepin-Cider* of the last year doth till this day, and still retains its original pleasantness without the least turn towards sowreness.

And I am very confident, the difference of time and trouble, which this year we found in getting the *Cider* to *fine* and be in a condition to *Bottle*, was only the effect of a very bad and wet Summer, which made the Fruit not ripen kindly; and to make it yet worse, we had just at the time when we made our *Cider*, this year, extream wet and windy weather, which (added to the unkindliness of the Fruit) was the whole cause of this alteration: And however my *Hypothesis* as yet remains firm, for if by taking any part of the *Lee* from the *Cider* you can preserve it in its original sweetness, it is not at all material whether it be always to be done by twice drawing off from the *Lee*, or that it must sometimes

times be done with more trouble; and by oftner repeating the same Work, so that finally it be done; and by the same means, that is, by taking away part of the *Lee*, which otherwise would have caused too much *fermentation*; and consequently have made the *Cider* lose part of its original sweetness.

My Lord, I should not have presumed to have given you and the *Society* the trouble of perusing this Paper, but that, if possible, I would have you see, that what I think an error in any opinion that I have held, I am willing to own; and yet I desire not that you should think my mistake greater than in Reality it is.

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## OBSERVATIONS

Concerning the

Making, and Preserving

O F

CIDER:

B Y

JOHN NEWBURGH Esq;

I.

**I**F the *Apples* are made up immediately from the *Tree*, they are observ'd to yield *more*, but not so *good* Cider, as when *boarded* the space of a Month or six weeks; and if they contract any unpleasing taste (as sometimes 'tis confess'd they do) it may be imputed to the Room they lie in, which if it hath any thing in it, of either too sweet or unsavoury smell, the *Apples* (as things most susceptible of impression) will be easily tainted thereby.

One of my acquaintance, when a child, hoarding *Apples* in a Box where *Rose-Cakes* and other sweets were their companions, found them of so unsavoury taste, and of so rank a relish deriv'd from the too near neighbour-hood of the Perfumes, that even a childish palate (which seldom mislikes any thing that looks like an *Apple*) could not dispense with it.

2.

It is therefore observ'd by prudent *Fruiterers*, to lay their *Apples* upon clean new made *Reed*, till they grind them for *Cider*, or otherwise make use of them. And if, notwithstanding this caution, they contract any rottenness before they come to the *Cider-press*, the damage will not be great, if care be had before the *Apples* be ground, to pick out the finnewed and the black-rotten; the rest, though somewhat of putrefaction hath pass'd upon them, will not render the *Cider* ill condition'd, either in respect of taste, or duration.

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A Friend of mine having made provision of *Apples* for *Cider*, whereof so great a part were found rotten when the time of grinding them came, that they did, as 'twere, wash the Room with their Juice, through which they were carried to the *Wring*, had *Cider* from them not only passable, but exceeding good; though not without previous use of the pre-mention'd Caution. I am also assured by a Neighbour of mine, That a Brother of his who is a great *Cider-Merchant* in *Devonshire*, is by frequent experience so well satisfied of the harmlessness of *Rotten-Apples*, that he makes no scruple of exchanging with any one that comes to his *Cider-press*, a Bushel of *sound-Apples* for the same measure of the other. Herein, I suppose, (if in other respects they be not prejudicial) he may be a gainer by the near compression of the tainted Fruit, which, as we speak in our Country Phrase, will go nearer together than the other. His advantage may be the greater, if the conceit which goes current with them be not a bottomless fancy, That a convenient quantity of *rotten-apples* mixt with the sound, is greatly assitant to the work of *fermentation*, and notably helps to clarify the *Cider*.

## 3.

It matters not much whether the *Cider* be forc'd to purge it self by working downwards in the Barrel, or upwards at the usual Vent, so there be matter sufficient left on the top for a thick skin or film, which will sometimes be drawn over it when it works, after the usual manner, as when 'tis presently stopt up with space left for *fermentation*, to be perform'd altogether within the Vessel.

The thick skin, or *Leathern-coat*, the *Cider* oftentimes contracts, as well after it hath purged it self after the usual manner, as otherwise, is held the surest preservation of its *spirits*, and the best security against other inconveniences incident to *this*, and other like *vinous Liquors*, of which the *Devonshire Cider-Merchants* are so sensible, that, beside the particular care they take, that matter be not wanting for the Contexture of this upper garment by stopping up the Vessel as soon as they have fill'd it; (with the allowance of a Gallon or two upon the score of *Fermentation*) they cast in Wheaten Bran, or Dust, to thicken the Coat, and render it more certainly Air-proof. And I think you will believe their care in this kind not impertinent, if you can believe a story which I have to tell of its marvellous efficacy: A near neighbour of mine assures me, that his Wife having this year filled a Barrel with *Mead*, being strong, it wrought so boisterously in the Vessel, that the good Woman casting her eye that way, accidentally, found it leaking at every chink, which ascribing to the strength of the Liquor, she thought immediately by giving it vent, to save both the Liquor and the Vessel, but in vain; both the Stopples being pulled out, the leakage still continued, and the Vessel not at all reliev'd, till casually at length putting

putting in her finger at the top, she brake the premention'd film; which done, a good part of the *Mead* immediately flying out, left the residue in peace, and the leakage ceased. It may seem incredible that so thin a skin should be more coercive to a mutinous Liquor, than a Barrel with Oaken-Ribs, and stubborn Hoops: But I am so well assur'd of the veritableness of my Neighbours Relation, that I dare not question it: The reason of it let wiser men determine.

## 4.

If the *Apples* be abortive, having been (as it usually happens) shaken down before the time by a violent Wind, it is observ'd to be so indispensably necessary that they lie together in hoard, at least till the usual time of their maturity, that the *Cider* otherwise is seldom, or never found worth the drinking.

A Neighbour told me, That making a quantity of *Cider* with *Wind-falls* which he let ripen in the Hoard, near a month interceding between the time of their decussion, and that which Nature intended for their maturity; his *Cider* prov'd very good, when all his Neighbours who made up their untimely fruit assoon as it fell, had a crude, austere, indigested Liquor, not worth the name of *Cider*.

## 5.

No Liquor is observ'd to be more easily affected with the favour of the *Vessel* it is put into, than *Cider*; therefore singular care is taken by discreet *Cider-Masters*, That the *Vessel* be not only *tasteless*, but also well prepar'd for the *Liquor* they intend to fill it with. If it be a new *Cask*, they prepare it by scalding it with Water, wherein a good quantity of *Apple-pomice* hath been boil'd: if a tainted *Cask*, they have divers ways of cleansing it. Some boil an *Ounce* of *Pepper* in so much Water as will fill an *Hogshead*, which they let stand in a *Vessel* of that capacity two or three days, and then wash it with a convenient quantity of fresh Water scalding hot, which they say is an undoubted cure for the most dangerously infected *Vessel*. A Friend and Neighbour of mine herewith cured a *Vessel* of so extream ill favour, as it was thought it would little less than poyson any Liquor that was put into it. Others have a more easie, and perhaps no less effectual Remedy. They take two or three stones of quick-Lime, which in six or seven Gallons of Water they set on work in the *Hogshead* being close stopt, and tumbling it up and down till the commotion cease, it doth the feat. Of *Vessels* that have been formerly used, next to that which hath been already acquainted with *Cider*, a *White-Wine*, or *Vinegar Cask* is esteem'd the best; *Claret* or *Sack* not so good. A Barrel newly tenanted by small *Beer* suits better with *Cider* than a strong-*Beer* *Vessel*.



6.

Half a peck of unground Wheat put to *Cider* that is harsh and eager, will renew its *fermentation*, and render it more mild and gentle. Sometimes it happens without the use of any such means to change with the season, and becomes of *sharp* and *sour* unexpectedly *benign* and *pleasant*. Two or three *Eggs* whole put into an *Hogshead* of *Cider* that is become sharp and near of kin to *Vinegar*, sometimes rarely lenifies and gentilizes it. One pound of *broad-figs* slit, is said to dulcifie an *Hogshead* of such *Cider*.

A Neighbour *Divine*, of my acquaintance, assured me, That coming into a *Parsonage-house* in *Devonshire*, where he found eleven *Hogshead* of *Cider*; being unwilling to sell what he never bought, he was three years in spending that store which the former *Incumbent* had left him; and it greatly amus'd him (as well it might, if he remember'd the old *Proverb*, *He mends as sour Ale in Summer*) to find the same *Cider*, which in *Winter* was almost as sharp as *Vinegar*, in the *Summer* become a potable and good natur'd Liquor.

7.

A little quantity of *Mustard* will clear an *Hogshead* of muddy *Cider*. The same Virtue is ascribed to two or three *rotten Apples* put into it. *Mustard* made with *Sack* preserves boil'd *Cider*, and spirits it egregiously.

8.

*Cider* is found to *ferment* much better in mild and moist, than in cold and dry weather. Every ones Experience hath taught him so much in the late frosty season. If it had not wrought before, it was in vain to expect its working or clearing then, unless by some of the artificial means premention'd, which also could not be made use of in a more inconvenient time.

9.

The latter running of the *Cider* bottled immediately from the *Wring*, is by some esteem'd a pure, clear, small, well relisht Liquor; but so much undervalued by them who desire strong drinks more than *wholesome*, that they will not suffer it to incorporate with the first running.

In *Devonshire* where their *Wrings* are so hugely great, that an *Hogshead* or two runs out commonly before the *Apples* suffer any considerable preffure, they value this before the other, much

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after the rate which we set upon *life-honey* (that which in like sort drops freely out of the *Combs*) above that which renders not it self without *compression*. In *Jersey* they value it a *Crown* upon an *Hogshead* dearer than the other: (This I take from the Relation of one of my Neighbours, who sometimes lived in that *Island*, which for *Apples* and *Cider* is one of the most famous of all belonging to his *Majesties* Dominions) Yet even upon *this*, and their choicest *Ciders*, they commonly bestow a *pail* of *water* to every *Hogshead*, being so far (it seems) of *Pindar's* mind, that they fear not any prejudice to their most excellent *Liquors* by a dash of that most excellent *Element*: Infomuch that it goes for a common saying amongst them, That if any *Cider* can be found in their *Island*, which can be prov'd to have no mixture of *Water*, 'tis clearly forfeited. It seems they are strongly conceited, that this addition of the most useful *Element*, doth greatly meliorate their *Cider*, both in respect of *Colour*, *Taste*, and *Clarity*.

## 10.

The best *Cider-fruit* with us in this part of *Dorsetshire* (lying near *Bred-port*) next to *Pepin* and *Pearmain*, is a *Bitter-sweet*, or (as we vulgarly call them) *Bitter-scale*, of which for the first, the *Cider* unboil'd keeps well for one year; boiling it you may keep it two years or longer.

About seven years since I gave my self the Experience of *Bitter-scale-Cider* both crude and boil'd. I call'd them both to account at twelve Months end. I then found the *crude Cider* seemingly as good, if not better, than the *boiled*. But, having stopt up the *boil'd*, I took it to task again about ten Months after. At which time, I found it so excessively strong, that five persons would hardly venture upon an ordinary *Glass* full of it. My friends would hardly believe but I had heightned it with some of my *Chymical Spirits*. The truth is, I do not remember that I ever drunk any *Liquor*, on this side *Spirits*, so highly strong, and *spirituous*; but wanting pleasantness answerable to its strength, I was not very fond of my *Experiment*. In which I boil'd away, as I remember, more than half.

## 11.

A Neighbour having a good Provent of *pure-Lings* (an *Apple* of choice account with us) making up a good part of them to *Cider*, expected rare *Liquor*, but it prov'd very mean and pitiful *Cider*, as generally we find that to be, which is made without mixture. We have few *Apples* with us, beside the *Bitter-scale*, which yield good *Cider* alone; next to it is

is a *Deans-Apple*, and the *Pelesantine* I think may be mention'd in the third place; neither of which need the Addition of other *Apples* to set off the Relish, as do the rest of our choicest Fruits. *Pepins*, *Pearmains*, and *Gilliflowrs* commixt, are said to make the best *Cider* in the world. In *Jersey* 'tis a general observation, as I hear, That the more of red any *Apple* hath in its rind, the more proper it is for this use. *Paleface's-Apples* they exclude as much as may be from their *Cider-Vat*. 'Tis with us an observation, That no *sweet-Apple* that hath a tough rind, is bad for *Cider*.

## 12.

If you *boil* your *Cider*, special care is to be had; That you put it into the *furnace* immediately from the *Wring*; otherwise, if it be let stand in *Vats* or *Vessels* two or three days after the pressure, the best, and most *spirituous* part will ascend, and vapour away when the fire is put under it; and the longer the *boiling* continues, the less of goodness, or virtue will be left remaining in the *Cider*.

My *Distillations* sufficiently instruct me, That the same *Liquor* which (after *fermentation* hath pass'd upon it) yields a plentiful quantity of *spirit*, drawn off unfermented, yields nothing at all of *spirit*. And upon the same account it is undoubtedly certain, That *Cider* boil'd immediately from the *Wring*, hath its *spirits* compress'd, and drawn into a narrower compass, which are for the most part walk'd and evaporated by late unseasonable boiling.

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# CONCERNING C I D E R,

By Doctor S M I T H.

**T**HE best time to *grind* the Apples is immediately from the *Tree*, so soon as they are thoroughly ripe: for so they will yield the greater quantity of *Liquor*, the *Cider* will drink the better, and last longer than if the Apples were hoarded: For *Cider* made of hoarded Apples will always retain an unpleasant taste of the Apples, especially if they contract any rottenness.

The *Cider* that is ground in a *Stone-case* is generally accused to taste unpleasantly of the *Rinds, Stems, and Kernels* of the Apples; which it will not if ground in a *Case of Wood*, which doth not bruise them so much.

So soon as the *Cider* is made, put it into the *Vessel* (leaving it about the space of one *Gallon* empty) and presently stop it up very close: This way is observed to keep it longer, and to preserve its *Spirits* better than the usual way of filling the *Vessel* quite full, and keeping it open till it hath done fermenting.

*Cider* put into a new *Vessel* will often taste of the *Wood*, if it be pierced early; but the same stopped up again, and reserved till the latter end of the year, will free it self of that taste.

If the *Cider* be sharp and thick, it will recover it self again: But if sharp and clear, it will not.

About *March* (or when the *Cider* begins to sparkle in the glass) before it be too fine, is the best time to bottle it.

*Cider* will be much longer in clearing in a mild and moist, than in a cold and dry *Winter*.

To every *Hogshead* of *Cider*, designed for two years keeping, it is requisite to add (about *March*, the first year) a quart of *Wheat* unground.

The best *Fruit* (with us in *Glocester-shire*) for the first years *Cider*, are the *Red-strake*; the *White* and *Red Must-apple*, the sweet and sour *Pepin*, and the *Harvy-apple*.

*Pearmains* alone make but a small liquor, and hardly clearing of it self; but, mixed either with sweet or sour *Pepins*, it becomes very brisk and clear.

*Must-apple-cider* (though the first made) is always the last ripe; by reason that most of the *pulp* of the *Apple* passeth the *strainer* in pressing, and makes it exceeding thick.

The *Cider* of the *Bromsbury-crab*, and *Fox-whelp*, is not fit for drinking, till the second year, but then very good.

The *Cider* of the *Bromsbury-crab* yields a far greater proportion of *Spirits*, in the distillation, than any of the others.

*Crabs* and *Pears* mixed make a very pleasing Liquor, and much sooner ripe than *Pears* alone.

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## CIDER:

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Capt. SYLAS TAYLOR.

**H**erefordshire affords several sorts of *Cider-apples*, as the two sorts of *Red-strakes*, the *Gennet-moyle*, the *Summer-violet*, or *Fillet*, and the *Winter-fillet*; with many other sorts which are used only to make *Cider*. Of which some use each sort *simply*; and others *mix* many sorts together. This *County* is very well stored with other sorts of *Apples*; as *Pepins*, *Pearmains*, &c. of which there is much *Cider* made, but not to be compared to the *Cider* drawn from the *Cider-apples*; among which the *Red-strakes* bear the Bell; a *Fruit* in it self scarce *edible*; yet the *juice* being pressed out is immediately pleasant in taste, without any thing of that *restringency* which it had when incorporated with the *meat*, or *flesh* of the *Apple*. It is many times *three Months* before it comes to its *clearness*, and *six Months* before it comes to a ripeness fit for *drinking*; yet I have tasted of it *three years old*, very pleasant, though dangerously strong. The colour of it, when *fine*, is of a sparkling *yellow*, like *Cavary*, of a good full body, and *oily*: The *taste*, like the *Flavour* or *perfume* of excellent *Peaches*, very grateful to the *Palate* and *Stomach*.

*Gennet-moyles* make a *Cider* of a smaller body than the former, yet very pleasant, and will last a *year*. It is a good eating pleasant sharp fruit, when ripe, and the best *Tart-apple* (as the *Red-strake* also) before its ripeness. The *Tree* grows with certain knotty *extuberancies* upon the *branches* and *boughs*; below which *knot* we cut off boughs the thickness of a mans *wrist*, and place the *knot* in the ground, which makes the *root*; and this is done to raise this *fruit*; but very rarely by *grafting*.

Of *Filletts* of both sorts (*viz.* *Summer* and *Winter*) I have made *Cider* of that proportionate taste and strength, that I have deceived several experienced *Palates*, with whom (simply) it hath passed for *White Wine*; and dashing it with *Red-Wine*, it hath passed for *Claret*; and mingled with the *Syrup* of *Rasp'yes* it makes an excellent *women's wine*: The fruit is not so good as the *Gennet-moyle* to eat. The *Winter-fillet* makes a *lasting Cider*, and the *Summer-fillet* an *idly Cider*, but both very strong; and the *Apples* mixt together make a good *Cider*.

These

These Apples yield a *liquor* more grateful to my *Palate* (and so esteem'd of in *Herefordshire* by the greater *Ciderists*) than any made of *Pepins* and *Pearmains*, of which sorts we have very good in that *Country*; and those also both *Summer* and *Winter* of both sorts, and of which I have drank the *Cider*; but prefer the other.

*Grounds* separated only with a *Hedge* and *Ditch*, by reason of the difference of *Soils* have given a great alteration to the *Cider*, notwithstanding the *Trees* have been grafted with equal care, the same *Grafts*, and lastly the same care taken in the making of the *Cider*. This as to the *Red-strake*; I have not observ'd the same *niceness* in any other fruit; for *Gennet-moyles*, and *Fillets* thrive very well over all *Herefordshire*. The *Red-strake* delights most in a fat soil: *Hamlacy* is a rich intermixt soil of *Red-fat-clay* and *Sand*; and *Kings-capel* a low hot sandy ground, both well defended from noxious *Winds*, and both very famous for the *Red-strake-cider*.

There is a *Pear* in *Hereford* and *Worcester-shires*, which is called *Bareland-pear*, which makes a very good *Cider*. I call it *Cider* (and not *Perry* because it hath all the *properties* of *Cider*. I have drank of it from half a year old to two years old. It keeps it self without *Roping* (to which *Perry* is generally inclined) and from its taste: *Dr. Beal*, in his little *Treatise* called the *Herefordshire-Orchard*, calls it deservedly a *Masculine Drink*; because in taste not like the sweet *luscious feminine* juice of *Pears*. This *Tree* thrives very well in barren ground, and is a fruit (with the *Red-strake*) of which *Swine* will not eat; therefore fittest to be planted in *Hedge-rows*.

*Red-strakes* and other *Cider-apples* when ripe (which you may know partly by the blackness of the *Kernels*, and partly by the colour and smell of the fruit) ought to be gathered in *Baskets* or *Bags*, preserved from bruising, and laid up in heaps in the *Orchard* to sweat; covered every night from the dew: Or else, in a *Barn-floor* (or the like) with some *Wheat* or *Rye-straw* under them, being kept so long till you find, by their *mellowing*, they are fit for the *Mill*.

They that grind, or bruise their *Apples* presently upon their gathering, receive so much *liquor* from them, that between *twenty* or *twenty two Bushels* will make a *Hogshead* of *Cider*: but this *Cider* will neither keep so well, nor drink with such a *fragrancy* as is desired and endeavoured.

They that keep them a *month* or *six weeks* hoarded, allow about *thirty bushels* to the making of a *Hogshead*; but this hath also an inconvenience; in that the *Cider* becomes not *fine*, or fit for drinking, so conveniently as a *mean* betwixt these two will afford.

Keep them then about a *fort-night* in a *board*, and order them to be of such a *cast* by this *Mellowing*, that about *twenty five Bushels* may make a *Hogshead*, after which *mellowing* proceed thus.



1. *Pick* and *clear* your *Apples* from their *stalks*, *leaves*, *moaziness*, or any thing that tends toward *rotteness* or decay.

2. Lay them before the *stone* in the *Cider-Mill*, or else beat them small with *Beaters* (such as *Paviers* use to fix their pitching) in deep *troughs* of *Wood* or *Stone* till they are fit for the *Press*.

3. Having laid clean *wheat straw* in the bottom of your *Press*, lay a heap of bruised *Apples* upon it, and so with small handfuls or *wisps* of *straw*, which by twisting takes along with it the ends of the *straw* laid first in the bottom, proceed with the bruised *Apples*, and follow the heaps with your twisted *straw*, till it comes to the height of two foot, or two foot and a half; and so with some *straw* drawn in by *twisting*, and turned over the top of it (so that the bruised *Apples* are set as it were into a deep *Cheef-vat* of *straw*, from which the Country people call it their *Cider-cheese*) let the *board* fall upon it *even* and *flat*, and so engage the force of your *skrew* or *Press* so long as any *Liquor* will run from it. Instead of this *Cheese* others use *bags* of *Hair-cloth*.

4. Take this *Liquor* thus forced by the *Press*, and *strain* it thorow a *strainer* of *hair* into a *Vat*, from whence straight (or that day) in *pails* carry it to the *Cellar*, tunning it up presently in such *Vessels* as you intend to preserve it in; for I cannot approve of a long *evaporation* of *spirits*, and then a disturbance after it settles.

5. Let your *Vessels* be very tight and clean wherein you put your *Cider* to settle: The best form is the *stun* or *stand*, which is set upon the lesser end, from the top tapering downwards; as suppose the *head* to be *thirty inches* *diameter*, let then the *bottom* be but *eighteen* or *twenty inches* in *diameter*; let the *Tun-hole* or *Bung-hole* be on the one side *outwards*, towards the *top*. The reason of the goodness of this form of *Vessel* is, because *Cider* (as all strong *Liquors*) after *fermentation* and working, contracts a *cream* or *skin* on the *top* of them, which in this form of *Vessel* is as it sinks *contracted*, and fortified by that contraction, and will draw fresh to the last drop; whereas in our ordinary *Vessels*, when drawn out about the half or middle, this *skin dilates* and *breaks*, and without a quick draught decays and dies.



6. Reserve a *Pottle* or *Gallon* of the *Liquor* to fill up the *Vessel* to the brim of the *Bung-hole*, as oft as the *fermentation* and working lessens the *Liquor*, till it hath done its work.

7. When it hath completed its work, and that the *Vessel* is filled up to the *bung-hole*, stop it up close with well mix'd *clay*, and well tempered, with a handful of *Bay-salt* laid upon the top of the *clay*, to keep it moist, and renewed as oft as need shall require; for if the *clay* grows dry it gives *vent* to the *spirits* of the *Liquor*, by which it suffers decay.

## Concerning Cider.

I am against either the *boyling* of *Cider*, or the hanging of a bag of *spices* in it, or the use of *Ginger* in drinking it; by which things people labour to correct that *windiness* which they fancy to be in it: I think *Cider* not *windy*; those that use to drink it are most free from *windiness*; perhaps the *virtue* of it is such, as that once ripened and mellowed, the drinking of it in such strength combates with that *wind* which lies insensibly latent in the body. The *Cider* made and sold here in *London* in *Bottles* may have that *windiness* with it as *Bottle-beer* hath, because they were never suffered to *ferment*: But those that have remarked the strength and vigour of its *fermentation*, what weighty things it will cast up from the bottom to the top, and with how many bubbles and bladders of *wind* it doth *work*, will believe that it clears it self by that operation of all such injurious *qualities*.

To preserve *Cider* in *Bottles* I recommend unto you my own *Experience*, which is, Not to *bottle* it up before *fermentation*; for that incorporates the *windy quality*, which otherwise would be ejected by that operation: This violent suppression of fermentation makes it *windy* in drinking, (though I confess *brisk* to the *taste*, and *sprightly* cutting to the *Palate*:) But after *fermentation*, the *Cider* resting two, three, or four Months, draw it, and *bottle* it up, and so lay it in a *Repository* of cool *springing water*, two or three foot, or more, deep; this keeps the *spirits*, and the best of the *spirits* of it together: This makes it drink quick and lively; it comes into the *glass* not *pale* or troubled, but bright *yellow*, with a speedy vanishing *nittiness*, (as the *Vintners* call it) which *evaporates* with a *sparkling* and *whizzing* noise; And than this I never tasted either *Wine* or *Cider* that pleased better: Insomuch that a *Noble-man* tasting of a *Bottle* out of the *water* (himself a great *Ciderist*) protested the excellency of it, and made with much greater charges, at his own dwelling, a *water Repository* for his *Cider*, with good success.

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An

An ACCOUNT of

## Perry and Cider

Out of GLOUCESTER-SHIRE,

Imparted by

DANIEL COLLWALL Esq;

**A**Bout *Taynton* Five Miles beyond *Gloucester*, is a mixt sort of *land*, partly *Clay*, a *Marle*, and *Crash*, as they call it there, on all which sorts of *land*, there is much *Fruit* growing, both for the *Table* and for *Cider*: But it is *Pears* it most abounds in, of which the best sort is that they name the *Squash-Pear*, which makes the best *Perry* in those Parts. These *Trees* grow to be very large, and exceeding fruitful, bearing a fair round *Pear*, red on the one side, and yellow on the other, when fully ripe: It oftentimes falls from the *Tree*, which commonly breaks it; but it is of a nature so *harsh*, that the *Hogs* will hardly eat them.

They usually plant the *stocks* first, and when of competent bigness (and tall enough to prevent *Cattel*) graff upon them: 'Tis observed, that where *land* is *Plow'd* and dress'd for *Corn*, the *Trees* thrive much better than in the *Pasture-grounds*, so as divers *Orchards* are yearly *plow'd* and sown with *Corn*, which for the most part, they suffer their *Swine* to eat upon the ground, without cutting; and such *Plantations* seldom or never fail of plentiful *Crops*, especially in the *Rye-land*, or light *Grounds*.

About *Michaelmas* is made the best *Cider*, and that of such *Fruit* as drops from the *Trees*, being perfectly mature; and if any are gathered sooner, they let them lie in the *house* 8 or 9 days for the better mellowing.

The best *Mills* to grind in, are those of *Stone*, which resembles a *Mill-stone* set *edge-ways*, moved round the *Trough* by an *Horse* till the *Fruit* be bruised small enough for the *Press*: This done, then put it up into a *Crib* made with strong studds, and *Oken* or *Hasel* twigs about 3 foot high, and 2½ wide, which is placed on a *Stone* or *Wooden Cheese-fat*, a foot broader than the *Crib*, fitted to a round *Trough* for the *Liquor* to pass into the *Cistern* which is a large Vessel: When the *Crib* is filled with the foresaid ground *Fruit*, they put a *Stone* upon it, but first they fit a *Circle* of fresh *straw* about the *Crib*, to preserve the *Must* (which is the bruised *Fruit*) from straining through the *Crib* when they apply the *skrews*, which being two in number, and of a

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good



## Concerning Cider.

good size, turn in a great *beam*, and so are wrung down upon the *Crib*, within which they place two wide and thick *Cheese-fats*, and several *blocks* upon the *Fruit*, to crush it down with the more force, by which means it is wrung so *dry*, as nothing can be had more out of it. A *Crib* will contain at once, as much ground *Fruit*, as will make above an *Hogshead* of *Cider*, and there may be dispatched *six* or *seven* such *Vessels* in one day.

When the *Pressing* is finished, they take out the *Fruit*, and put it into a great *Fat*, pouring several *Pails* of *Water* to it, which being well *impregn'd*, is ground again slightly in the *Mill*, to make an ordinary *Cider* for the *servants*; this they usually drink all the *Year* about.

When the best *Liquor* is tun'd up, they commonly leave the *Bung-hole* open, for *nine* or *ten* days, to ferment and purify; for though in most places they add *straining* to all this, yet some of the *Harks* and *Ordure* will remain in it. The *Vessel* after a day or two standing, is fill'd up, and still as the *Cider* wastes in working, they supply it again, till no more *filth* rises; and then stop it up very accurately close, leaving only a small *breathing* hole to give it air for a *Month* after, and to prevent the *bursting* of the *Vessel*.

*Note*, That they sometimes put  $\frac{1}{2}$  *Pears*, and  $\frac{1}{2}$  of *Apples*.

## The usual Names of Gloucester-shire Cider-Fruit.

*Red-strakes*, growing chiefly in the *Rye-Lands*, sweet *White-Musts*, *Red-Must*, the *Winter-Must*, the *Streak-Must*, the *Gennet-Moyl*, the *Woodcock-Apple*, the *Bromsgrove-Crab*, the *Great-white-Crab*, the *Heming*, and divers other sorts, but these are the principal.

The *Pears* for *Perry* are,

The *Red Squash-pear* esteem'd the best, the *John-pear*, the *Har-pary Green-pear*, the *Drake-pear*, the *Green Squash-pear*, the *Mary-pear*, the *Lullam-pear*: these are the chief.

For

*For making of Cider out of Mr. Cook.*

**L**ET your *Fruit* hang till thorow *Ripe*, to be known by the brownness of the *Kernel*, or that they rattle in the *Apple*, or if they fall much in still weather, or that they handle like dry wood, sounding if tossed up: If it be green, your *Cider* will be *sowre*. Gather dry, with these directions, reject the much *bruised*, they will rot, marr the *taste*, and give an high *Colour*.

Of good yielding *Fruit* not too long kept, 18 or 20 *Bushels* will make an *Hogshead*: If you gather not by hand, which is tedious, lay a truss of *Straw* beneath the *Tree* and over that a *Blanket*, discreetly shaking it down, not too many at a time, but often carrying them where they are to sweat, which should be on dry *Boarded* floors, by no means on *Earth*, unless store of sweet *Straw* lie under: By about 10 or 14 days they will have done sweating: Then *Grind* or *Beat* them, keeping the *Fruit* several in case you have enough to fill a *Vessel* of one kind, if not, put such together as are near ripe together, for its more uniformly *fermenting*. Winter *Fruit* may lie 3 weeks or a month e're you grind; the greener they are when gathered, let them lie the longer.

Being *Ground* let them continue 24 hours before *pressing*, 'twill give it the more Amber bright colour, hinder its over *Fermenting*; and if the *Fruit* were very mellow, add to each 20 *Bushels* of stampings, 6 *Gallons* of pure water, poured on them so soon as beaten: The softer and *mellower*, the more *water* to restrain its over-working, and though the *Cider* be weaker, it will prove the pleasanter: for over ripe and *mellow* *Fruit*, let go so much of the loose and fleshy substance through the percolation, that with difficulty will you separate the *Lee* from the *Liquor* before it *Ferment*, and then away go the brisk and pleasant *Spirits*, and leave a vapid or sour drink contracted from the remanent gross *Lees*: The *Cider* made of such *Fruit* had need be settling 24 hours in a large *Vat* or *Vessel*, that the *Faces* may settle before you tun it up, and then draw it off, leaving as much of this thick *Lee* behind as you can; (which yet you may put among your pressings for a water *Cider*.) If you conceive your *Cider* still so turbid that it will work much, then draw it into another *Vessel* by a *Tap*, 2 or 3 inches from the bottom, and so let it settle so long as you think it is near ready to work in it: for if it work in your *Tubs*, little of the gross *Lees* will you be able to get from it: *Note*, that you must keep it cover'd all the time it is in your *Tubs*, and the finer you put it up in your *Vessel*, the less it will *Ferment*, and the better your drink: But in case you chill the *Cider* (as oft it happens in cold winter weather) so as it do not work when put into *Cask*, cast into it a *pint* of the juice of *Alehoof* with half the quantity of *Icing-glass* to refine it, which though it do not suddenly, at the *Spring* it will.

These directions observ'd Barrel it up, and when it ceases work-

## Concerning Cider.

ing, bung it close, and reserve it so till fit to bottle, that is when fine, since till then it will endanger their bursting, and if you would have it very brisk and cutting (which most affect) put a little lump of Loaf-sugar into every Bottle.

The *Golden Pepin*, *Kerton Pepin*, *Russet Harvy*, *Kentish Codling* make excellent Cider; but above all *Red-strakes*, and *Gennet-moys*. Indeed any Apple which is not a *Crab*, there being divers sorts of *Wildings* and *hard-flesh'd Apples* proper for this liquor: But that *Pear* or *Apple* which is of a soft and loose flesh is not fit to make a *Vinous* drink, because of their breaking into so many particles, which are so difficult to separate: That *Fruit* therefore which being press'd, flats down and separates least, and that being kept beyond its time of maturity, grows rather tough than mellow, is far the best.

For *Water-cider*, take your stampings when you press them from your first liquor, and put them into *Tubs*, and they being full put to them half as much water as you had of Cider, the riper your *Fruit*, the more water; cover your *Vessels* and so let them stand four or five nights and days, if the season be cold, a full week; then press the stampings, as having as much as will fill a *Vessel*, set it on the *Fire* and *scum* it well, and that abated somewhat, pour it into *Coolers*, and being cold, tun it up, and bung it well after it has left working; In a Month after you may drink. Some add a little *Ginger*, *Cloves*, *Juniper-berries*, as they fancy.

In this sort order *Perrys*, only let not the *Fruit* be too ripe: Those of hard flesh, stonyest core and harsh taste are best: He recommends a *Pear* near *Watford*: and *Capt. Wingats* near *Welling*, also *Ruffin pear*.

Most sort of *baking-Pears* make good *Perry*.

Be curious of sweet well season'd *Casks*, such as have had *Sack*, *White*, *Claret* or good *Ale* in them before.

## Another.

TAKE your Apples when they relish best, not too green, nor too mellow, they who have large *Plantations* may shake their *Trees* a little, and gather those which fall off easily, and press them the same day: Fill not your *Cask* above three quarters full, and let it stand till it grow clear, which is commonly within eight or ten days, and then draw off only the clear, and fill up a clean *Cask* almost to the top; giving it vent thrice a day, lest it burst the vessel, and so continue to do for a week.

Then, for every ten *Gallons* of Cider, take one pound of *Raisins* of the *Sun*, and put them into some *Brandy* for a day or two, and then take only the *Raisins* and fling them into the Cider letting it stand three or four days more; lastly, stop the *Cask* very close, but *Bottle* it not till *March*, except it be of *Codlings*, which will not keep so long.

Another.



## Another.

Cider of Harvy-Apples, or Pepins boyld sent  
me out of Wales by Sir Thomas Hanmer.

**Y**OU must take only one sort of those Apples without mixture of kinds, and when they are stamp'd, let them be strain'd, boiling the juice, and continually as the scum rises, clear it: In this work you must diligently watch and observe the colour as it boils, and not suffer it to exceed the looks of good small-Beer, for if you expect till it be too high charg'd, it will become nothing worth: The Cider well clear'd of the scum, so soon as it is cold tunn it into a sweet Vessel leaving only a vent, the rest close stop'd, and when it sings, and begins to bubble up at the vent, draw it out into Bottles carefully clos'd: This will become excellent drink. Note, that you are to stamp and make your Cider of Harvy Apples as soon as they are gather'd; but the Pepins may lie at the least six weeks without detriment.

Another Account of CIDER from a Person  
of great Experience.

**C**ider-Apples for strength, and a long lasting Drink, is best made of the Fox-Whelp of the Forest of Dean, but which comes not to be drunk till two or three years old.

2. Bromsborow-Crab the second year; In the Coast and Tract 'twixt Hereford and Ledbury.

3. Under-leaf, best at two years, a very plentiful bearer, hath a Rhenish-wine flavour; the very best of all Ciders of this kind, boarded a little within doors. The longer you would keep, the longer you must board your Fruit.

4. The Red-strake of Kings-Capel, and those parts, is in great variety: Some make Cider that is not of continuance, yet pleasant and good; others, that lasts long, inclining towards the Bromsborow-Crab rather than a Red-strake.

5. A long pale Apple, called the Coleing, about Ludlow, an extraordinary bearer.

6. The Arier-Apple, a constant bearer, making a strong and lasting Cider; some call them Richards, some Grang-apples; and indeed they make so excellent a Drink, that they are worthy to be recover'd into use.

7. The Olive, well known about Ludlow, may, I conceive, be accounted of the Winter-Cider-Apples, of which 'tis the constant report, that an Hogshead of the Fruit will yield an Hogshead of Cider.

The

The *Summer-Ciders* are,

1. The *Gennet-Moyl* of one year : The best *Baking-Apple* that grows, and keeps long *baked* ; but not so *unbaked* without growing *mealy* : it *drys* well in the *Oven*, and with little trouble. The *Gennet-Moyl-Cider*, when the *Fruit* is well *boarded* and mellow, will body, and keep better.

2. The *Summer Red-strake*, of a wonderful *fragrant* and *Aromaticque* quality.

3. Sir *Ed. Harley's little Apple*, esteemed to make one of the richest *Ciders* in the World. Also, his,

4. *Great Summer-Apple*, resembling the *Red-strake*, juicy and *Aromaticque*.

5. The *White-Must*, *streaked-Must*, &c. great bearers, and their *Cider* early ripe.

6. *Pearmains*, have made excellent *Cider*, as good, if not superior to any other in some years ; and though it be true, that every sort of *Fruit* makes better *Drink* some years than others ; yet, for the most part, the goodness and perfection of *Cider* results from the lucky, or intelligent *Gathering*, or *Hoarding* of the *Fruit*, or from both ; and this *knowledge* must be from *Experience*.

7. Generally, the *Cider* longest in *fining*, is strongest and best tasting, especially if the *fruit* have been well *boarded* for some time.

8. *Cider* made of *Green*, and immature *Fruit*, will not *fine* kindly, and when it does, it abides not long good, but suddenly becomes *eagre*.

9. *Cider* kept in very cool *Cellars*, if made of ripe *Fruit*, renders it long in *fining*, and sometimes *Cider* by exposing abroad in the *Sun*, and kept *Warm*, hath sooner *matu'r'd*, and continu'd long good ; But the best *Drink* is that which *finer* of it self, preserved in an indifferent temper.

10. All *Cider* suffers *Fermentation* when *Trees* are *blossoming*, though it be never so old ; and *Cider* of very ripe *Fruit*, if *Bottl'd* in that *season*, will acquire a *fragrancy* of the *Blossom*.

11. New *Cider*, and all *diluted* and watred *Ciders*, are great *Enemies* to the *Teeth*, and cause violent *pains* in them, and *Rheums* in the *Head*.

12. One *Rotten-Apple*, of the same kind with the *sound*, corrupts a whole *Vessel*, and makes it *Musty*.

But since the *second*, and former *Impressions* of these *Discourses*, there is publish'd (by an ingenious and obliging hand) the *Vine-Tam Britannicum*, treating not only of *Cider*, but such other *Wines*, and *Drinks* as are extracted out of several *Fruits* : It is there he recommends,

The not gathering *Fruit* for *Cider*, till full maturity and *fragrancy* ; and that it is better to make several *Pressings*, than all at once, proportioning the *Vessels* accordingly.

That the *Fruit* be carefully gather'd, not *windfall'n* nor *bruis'd* :  
let

let such be left to dry a competent time before *grinding*, suffering your *Cider* thoroughly to *ferment* before you *Cask* it up.

Let *Cider* fruit remain some time in the *heap* upon dry *straw*, and under shelter, in a sweet place, to *sweat* out the *phlegm* and superfluous moisture, from ten to twenty days, if the *Fruit* be *harsh*, but not too long.

Then extract the *Liquor*, either by *hand-pounding* with great *Pestles* (which is the ruder and worst way) or by the *Horse-Mill*, with the *Mill stone* on edge in a *Trough* of *stone*, Expeditious but chargeable: Or by *grating*, *beating* with a *Maule*, which are trifling: or, *best of all*, by an *Engine* describ'd by the *Author* p. 82, &c. to which we refer the curious.

Remember, when you bring your *Fruit* to the *Mill*, you reject the *rotten*, *unripe*, *stalks*, and *leaves*.

That you grind not so small, as that too much of the *Pulp* pass with the *liquor*.

That after *grinding* it stand 24 or 48 *hours*, both to acquire *colour*, and that the unbruised parts of the *Fruit*, may the easier separate from the juice in the *Press*.

That some of the *Cider* be suffer'd to distill either through a false bottom to the *Vat*, or by a *Tap*, into a fit *Recipient*; This being the *Virgin*, and best liquor. Lastly,

That you squeeze the bruised *Pulp* in the *skew-Press*, within a circle of clean, sweet *Wheat-straw*; winding in the heap with the *wisp* to a foot in height, before you place the *board*, and apply the *straw*. But instead of the *straw-wisp*, a *Basket* may be fitted, which with a little *straw* within will keep the *Fruit* in better order: some make use of a *Hair-cloth-bag* placed in a frame.

That you *press* it as dry as may be, unless you intend to make a *diluter* sort, by mixing therewith the *Murc*.

That you pour the *Liquor* coming from the *Press*, through a *strainer* into a large *Vat*, to detain the grosser pieces of the *Fruit* from intermixing with the *clear*.

That you do not tunn it up immediately, as some pretend to prevent *evaporation* of *Spirits*; but, to cast a *cloth*, or *Blanquet* over the *Vat*, to the end that the wild, and untameable *Spirits* (which would even burst the *Barrel*) may be a little chequ'd and subdu'd.

That you carefully separate the *Flying Lee*, namely, the dispers'd, and grosser *Particles* of the *Fruit*, which comes with the *liquor*; This faciliated by *warmth*, or *Ising-glass*, three or four *ounces* to an *Hogshead*, beaten thin, *macerated*, and cut in small pieces in *White-wine*; then set on a gentle *Fire*, till 'tis well dissolv'd, boil it in a *Gallon* of *Cider*, and cast it into the *Mass*, suppose it of 20 *Gallons*, and so to every like proportion, stirring it well, and covering it close, for ten or twelve *hours*, within which time, it will usually have *precipitated* the *Glass*: Thus, when it ceases working, draw it from the *scum* with a little *spigot* below, or better, by a *Syphon* above, and so *barrel* it up close.

*Note*, that as you augment the proportion of *Ising-glass*, or *Water-*



*ter-glew*, so it will become more *limpid* and clear ; but there is a mediocrity to be observ'd, lest you render it too lean and thin.

That this way, as 'tis useful to the *defecating* of the *juices*, of all other *Liquors* made of *Fruit* ; so is it preferable to all *Fermentations* of *Test*, *Toasts*, *Percolations*, and *Rackings*, which not only tend to *Acidity*, but waists, and dispirits the *juices*, and besides is very troublesome.

The residence of impure *Faces* may be cast on the *Murc*, if you repress for a *Water-Cider*.

That *Liquors* thus purified are not obnoxious (by so frequent *refermentations*) to burst the *Bottles* upon change of weather.

Lastly, is prescribed the same form of standing *Vessels*, to preserve and keep it in, as we have already mention'd. The *Bung-hole* to be of two inches *diameter* with a *Plug*, and a *Vent-hole* near it.

That new *Vessels* be season'd, and scalded with *Water* in which *Apple-pumis* hath been boiled : If old *Vessels*, that they be such as have been us'd for *Canary*, *Spanish-wines*, or *Metheglin*, by no means *Ale* or *Beer*, yet *small beer* vessels if well scalded, may serve upon occasion.

To correct the *mustiness* of *Vessels* is prescribed a decoction of *Pepper* in water, one ounce to a *Hogshead* ; the *Vessel* being fill'd with it scalding hot, and so let stand two or three days : The same is cur'd with two, or three *stones of quick lime*, to fix or seven *Gallons* of water, put into the *Hogshead* close stop'd, and roll'd up and down.

*Glass bottles* preferred ; the *stopples* exquisitely fitted by grinding them with *oyl* and *Smyris*, or *Emery* (as our workmen call it) being careful to preserve each *stopple* to its *Bottle*, by tying it by the *knob*, to the neck thereof with a packthread.

The *Cure* of *musty Bottles* is boiling them in a vessel of water, putting them in whilst the water is *cold* to prevent their *Cracking*, and then set them on *straw*, and not on the cold floor, when you take them out.

In *Tunning* your *Cider*, the *Vessels* dry, fill them within an *inch* or less of the top, that there be space for the *head* or *skin* : Remembring to leave the *Bung-hole* open, or slightly cover'd two, or three days, to perfect its *fermenting*, if it happen to work : If not, and that it be design'd for long keeping, put into it some unground *Wheat*, a *quart* to an *Hogshead*, which inducing an artificial *head* or *skin*, protects it from all possible injury of the *Air*.

Having clos'd the *Bung*, peg the *Vent* but loosely ; that in case the liquor be unquiet, it may not heave up the head of the *Barrel* : wherefore you must stop, and ease the *Vent* from time to time discreetly, till all be in repose.

It is good to cover the *Plug* exactly adjusted to the *Bung* with a brown paper wetted, the better to wring it close.

*Cider* thoroughly purified, may be *bottl'd* at any time or season : If early, and vigorous it will need no assistance ; if later, flat, or acid, spirit it with a little *loaf Sugar* : If you *bottle* it early (to prevent

prevent any remanent *fermentation*) let them stand a while before you stop them close; or be sure to open them within two or three days after.

If you stop with *Corks*, let them be sweet, boyl'd, and us'd whilst yet moist, laying the *Bottles* side-ways. *Note*, that they stand better on the *ground*, than in *Frames*, unless in vaulted *Cellers*: But a *Refrigeratory* with a cold *Spring*, especially if it be running water, is most excellent. *Note*, that the binding down of the *Cork* indangers the *Bottles* breaking, whereas that omitted, you hazard only loss of the *Liquor*.

*Cider* boyl'd with *spices* not approv'd (though pleasant) as apt to contract an unflavory tincture from the Vessel 'tis boyl'd in: But this may haply be reform'd by such as are *tinn'd*.

*Cider* boyl'd to the expense of half, will keep well, and is very strong.

To restore decay'd *Liquor*; if flat, and *wappid* from a too free admission of *Air*, or ill stopping; Grind a parcel of *Apples*, putting them in by the *Bung-hole*; then stop the Vessel close, and sometimes give it *vent*: But this must be drawn off in few days, lest the *Murc* vitiate the *whole*: This yet may be prevented, by putting up only the new *Must* of the *Fruit* you press, on the decay'd *Cider*: The same may be done in *Bottles*, by adding a *spoonfull* or two of such *Must*, and stopping them carefully.

*Acid Cider* will sometimes recover of it self, in case any *Lee* remain; if not, add a *Gallon* of unground *Wheat* to each *bogshead*; or *Bottle* it with *Sugar*.

*Cider* turn'd and eager, is irrecoverable.

*Musty Cider* is best corrected, seldom restor'd with *Mustard-seed*, ground with some of the *Liquor*. Thick *Cider* is cur'd by exciting new *fermentation*.

To *Tun* it in *Vessels* fum'd with *Sulphur*, is an excellent, and wholesome preservative of *Cider*. See p. 117.

#### Water Cider.

Boil'd water, suffer'd to stand (till cool'd) is best, as being more *defecated*, and that it be mix'd in the *grinding*: This small *Beveredge* or *Ciderkin* and *Purre* (as 'tis call'd) is made for the common drinking of *Servants*, &c. supplying the place of small *beer*, and to many more agreeable: It is made by putting the *Murc* into a large *Vat*, adding what quantity of water you please, namely, about half the quantity of the press'd *Cider*, or more, as you desire it *stronger* or *smaller*: *Note*, that the water should stand 48 *hours* on it, before you press, *Tunning* up and immediately stopping what comes from the *Press*: Thus it will be *drinkable* in few days, clarifying it self: 'Tis fortified, by adding to it the *Lee* or settling of better *Cider*; putting it on the *Pulp* before *pressure*, or by some superfluous *Cider*, which your *Vessels* could not contain, or by *grinding* some *fall'n* and refuse *Apples*.

*Ciderkin* will be made to keep long by being *boil'd* after *pressing*

## Concerning Cider.

sure with such a proportion of Hops, as is usually added to Beer; in which case you need not to boil the Water before.

## Mixtures.

Though Cider needs not any, 'tis yet a very proper vehicle to transfer the virtue of any Aromatic, or Medicinal thing: such as Ginger, Juniper, &c. the Berries dried six, or eight in each Bottle, or proportionably in the Cask; But this is not so palatable as wholesome.

Ginger renders it brisk: dried Rosemary, Wormwood, juice of Corianders, &c. whereof a few drops tinges, and adds a pleasant quickness. Juice of Mulberries, Blackberries, and (preferable to all) Elderberries press'd among the Apples, or the Juice added: Clove-July-flowers dry'd, and macerated both for tincture and flavor is an excellent Cordial: Thus may the Vertues of any other be extracted: Some stamp Malaga Raisins, putting Milk to them, and letting it percolate through an Hippocras sleeve: A small quantity of this, with a spoonful or two of Syrup of Clove-July-flowers to each Bottle, makes an incomparable drink.

## Perry.

Let not your Pears be over mellow when you grind them, the palpiness obstructing the juice.

Crabs mix'd in grinding, improve the Perry, discretely proportion'd, according to the sweetness of the Pear: That of Bosbury yields the most lasting liquor.

## Vinegar of Cider

Is made by putting it upon the Rape, as the French to their bad Wines: by Rape is meant, the Husks of the Grape close press'd, which our Vinegarists have out of France, and use it as a Leaven to give it that Acidity: The husks of our English grape will probably supply the want of the other, not so easily to be had.

## Vertues.

Innumerable are the Vertues of Cider, as of Apples alone, which being raw eaten, relax the Belly, especially the sweet, aid concoction, depress vapours; being roasted or coiled are excellent in hot distempers, resist Melancholy, Spleen, Pleurisie, Strangurie, and being sweetened with sugar, abate inveterate Colds: These are the common effects even of raw Apples; but Cider performs it all, and much more, as more active and pure; in a word, we pronounce it for the most wholesome Drink of Europe, as specifically sovereign against the scorbute, the Stone, Spleen, and what not?

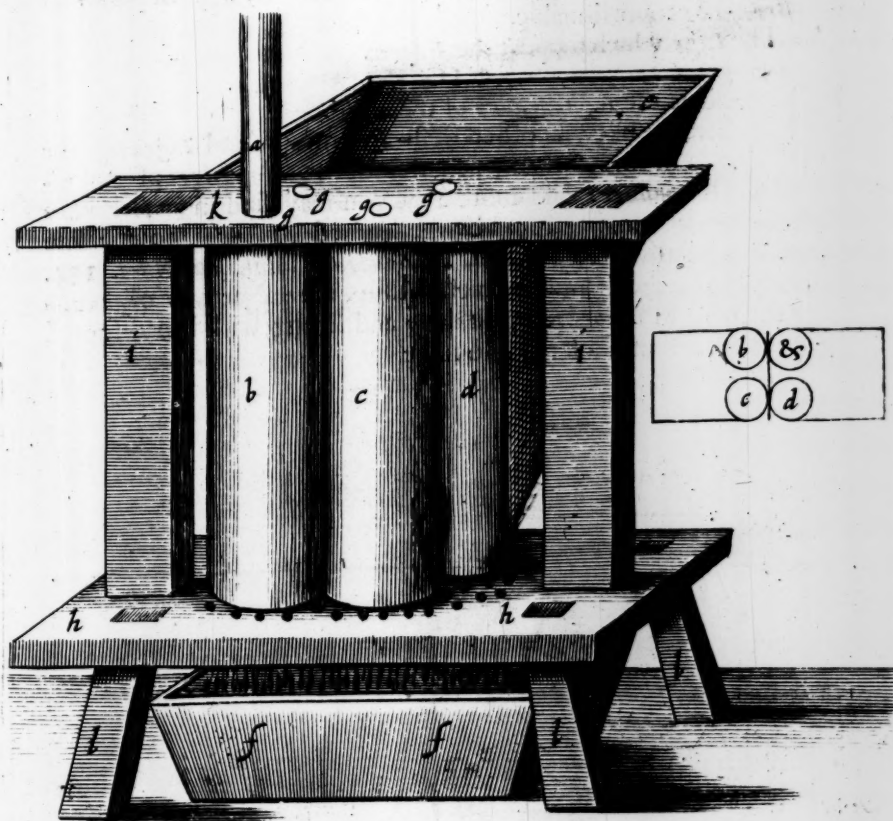
Pears are nourishing, especially the baked Warden, edulcorated with sugar, and is exceedingly restorative in Consumptions; the Perry a great Cordial, &c. After



After this our *Author* passes to an *Enumeration* of the best *Apples* and *Pears*, which we pass by ; because the *curious* will find them at the end of the annex't *Kalendar* ; Nor should I have subjoyn'd what we have here accumulated concerning *Cider*, occurring (as most of it does) in the former *Papers*, especially those of *Dr. Beale*, and *Esq; Newburgh*, *Capt. Taylor*, &c. but that we find what lies there dispersed, to be so *Methodically Recapitulated*.

To Conclude this *Treatise*,

We will gratifie the *Cider-Master* with the *Construction* of a new kind of *Press* brought into the *R. Society*, by their *Curator*, the ingenious *Mr. Hooke*, and if perfectly understood by him that shall imitate it, recommended not only for its extraordinary *Dispatch*, but for many other *vertues* of it, chiefly, the accurately *grinding* of the *Pulp*, and keeping the *Husks* from descending with the *Liquor*.



*Explication of the Figures.*

- a* The *Axis*, by which four *Cylinders* are to be mov'd, either by the force of *Men*, *Horses*, *Wind*, or *Water*, &c.  
*b. c. d* Three of the 4 (visible) *Cylinders*, so placed, that those  
 G g g 2 which

which are first to *bruise* the *Apples*, may stand at about *half an Inch*, or less *distance* from each other: Those that are to press out the *juice* may join as *Close*, as they can well be made to move.

*f. f* The *Trough*, in which to receive the *Liquor*, running through certain *holes* made in the lower *Plate* there marked.

*e. e* The *Hopper*, made *tapering* towards the *bottom*, in which you fling the *Apples*, and supply them as they *sink* towards the *Cylinders*. Note, That such another *Hopper* is suppos'd to be also made, and fitted to this *fore-part* of the *Press*, but here omitted, that the *prospect* and *description* of the *Cylinders* may the better be laid open and *demonstrated*.

*g. g. g* The *Spindles* of each *Cylinder*.

*h. b. i. i. k. k* The *Frame*, consisting of two *Plates*, and two *Pilasters*, which hold the *Cylinders* together. Note, That the *Cylinders* must be made of excellent *Oaken Timber*, or other *hard Wood*; the *dimensions* about 3 foot long, one foot and half *diameter*: The rest of the *Frame* for *thickness*, &c. of *size* and *strength* proportionable.

*l. l* The *Legs* which support the *Frame*.

#### FIG. II.

Represents the *Ichnography* of the *First*.

But there are likewise other fresh inventions and *Ingenios* for the dispatch of this work, namely that of Mr. *Wolridges* of *Petersfield* in *Hampshire*; and more that you may find in an *Hortulan* advertisement communicated by the learned Dr. *Beale* to the late *Publisher* of the *Philosophical Transactions*, Vol. 12. Num. 134. p. 846. Where, when all are reckon'd up, the vulgar way of *pounding* the *fruit* in *Troughs*, made deep and strong with broad-footed *pounders*, is found inferior to none.

Kalendarium

# Kalendarium Hortense:

OR THE

## Gardners Almanac;

Directing what He is to do

# MONTHLY,

THROUGHOUT THE

# YEAR.

AND

What FRUITS and FLOWERS are in *Prime*.

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*The Fifth Edition, with many useful Additions.*

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By JOHN EVELYN, Esq; *Fellow of the Royal Society.*

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Virg. Geo. 2. — *Labor actus in orbem.*

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LONDON,

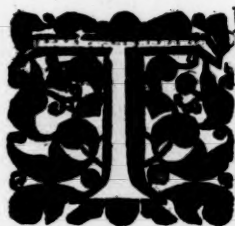
Printed for John Martyn, Printer to the Royal Society. 1679.



1944

TO  
ABRAHAM COWLEY Esq;

Sir,



His *Second Edition* of my *Hortulan Kalendar* is yours, mindful of the honour once conferr'd on it, when you were pleas'd to suspend your nobler *Raptures*, and think it worthy your *transcribing*. It appears now with some *advantages* which it then wanted; because it had not *that* of publishing to the *World*, how infinitely I magnifie your contempt of (not to say *revenge* upon) it; whilst you still continue in the *possession* of your *Self*, and of that *repose* which few men understand, in exchange for those pretty *miserics* you have essay'd: O the sweet *Evenings* and *Mornings*, and all the *Day* besides which are yours,

-----while Cowley's made  
The happy Tenant of the Shade!

And the *Sun* in his *Garden*, gives him all he desires, and all that he would enjoy; the purity of visible *Objects*, and of true *Nature* before she was vitiated by *Imposture* or *Luxury*!

-----Books, Wise Discourse, Gardens and Fields,  
And all the joys that unmixt Nature yields,

Misc.

You gather the first *Roses* of the *Spring*, and *Apples* of *Autumn*: And as the *Philosopher* in *Seneca* desir'd only *Bread* and *Herbs* to dispute felicity with *Jupiter*; You vie happiness in a *thousand* easie, and sweet *Diversions*; not forgetting the innocent *Toils* which You cultivate; the *Leisure* and the *Liberty*, the *Books*, the *Meditations*, and above all, the learned and choice *Friendships* that you enjoy:

## The Epistle Dedicatory.

enjoy : Who would not, like *You*, *Cacher sa vie ?* 'Twas the wise *Impress* of *Balzac*, and of *Plutarch* before him ; You give it *lustre* and *interpretation* : I swear to You, Sir, it is what in the World I most inwardly breath after, and pursue, not to say that I envy Your *felicity*, deliver'd from the guil'ded *impertinences* of life, to enjoy the moments of a solid and pure *Contentment* ; since those who know how *usefully* You employ this glorious *Recess*, must needs be forc'd either to *imitate*, or, as I do, to *celebrate* Your *Example*.

J. EVELYN.

IN-



# INTRODUCTION TO THE KALENDAR.

**A**s Paradise (though of Gods own Planting) was no longer Paradise, than the Man put into it, continued to dress it and to keep it; so, nor will our Gardens (as near as we can contrive them to the resemblance of that blessed Abode) remain long in their perfection, unless they are also continually cultivated. For when we have so much celebrated the life and felicity of an excellent Gard'ner, as to think it preferable to all other diversions whatsoever; it is not because of the leisure which he enjoys above other men; ease and opportunity which ministers to vain and insignificant delights; such as Fools derive from sensual objects: We dare boldly pronounce it, there is not amongst Men a more laborious life than is that of a good Gard'ners; but because a labour full of tranquillity and satisfaction, Natural and Instructive, and such as (if any) contributes to Piety and Contemplation, Experience, Health, and Longevity, munera nondum intellecta Deum: In sum, a condition it is, furnish'd with the most innocent, laudable, and purest of earthly felicities, and such as does certainly make the nearest approaches to that Blessed state, where only they enjoy all things without pains; so as those who were led only by the light of Nature, because they could phansee none more glorious, thought it worthy of entertaining the Souls of their departed Heroes, and most illustrious of Mortals.

But to return to the Labour, because there is nothing excellent which is to be attain'd without it: A Gard'ners work is never at an end; It begins with the Year, and continues to the next: He prepares the Ground, and then he Sows it; after that he Plants, and then he gathers the Fruits; but in all the intermedial spaces he is careful to dress it; so as Columella, speaking of this continual assiduity, tells us, A Gard'ner is not only to reckon upon the loss of bare twelve hours, but of an whole Year, unless he perform what is at the present requisite in its due period; and therefore is such a Monthly Notice of his Task as depends upon the Signs and Seasons highly

Prætermittas  
duodecim ho-  
ras, sed Annum  
perisse, nisi sua  
quæque quod in-  
stat effecerit:  
Quare, necessa-  
ria est Menstrui cujusque officii monitio ea, quæ pendet ex ratione Syderum Cœli, &c. Col. R. l. ix.

Gard'ners had need each *Star* as well to know,  
The *Kid*, the *Dragon*, and *Arcturus* too,  
As *Sea-men*, who through dismal storms are wont  
To pass the Oyster-breeding *Hellepont*.

H h h

— tam sunt Arcturi Sydera nobis  
Hædorumque dies servandi, & lucidus  
Anguis;  
Quam quibus in patriam ventosa per æ-  
quora vectis  
Pontus, & Ostriferi sauces tentantur  
Abydi. Geor. i.  
necessary.

necessary. All which duly weigh'd, how precious the time is, how precipitous the Occasion, how many things to be done in their just Season, and how intolerable a confusion will succeed the smallest neglect, after once a Ground is in order, we thought we should not attempt an unacceptable Work, if here we endeavour to present our Gard'ners with a compleat Cycle of what is requisite to be done throughout every Month of the Year: We say, each Month; because by dividing it into Parts so distinct, the Order in which they shall find each particular to be dispos'd, may not only render the Work more facile and delightful; but redeem it from that extream perplexity, which for want of a constant and uniform Method, we find does so universally distract the vulgar sort of them: They know not (for the most part) the Seasons when things are to be done\*; and when at any time they come to know, there often falls out so many things to be done on the sudden, that some of them must of necessity be neglected for that whole Year, which is the greatest detriment to this Mystery, and frequently irrecoverable.

\* Quia caput est in omni negotio, nosse quid agendum sit, &c. Columel. l. 1. c. 7.

Col. de R. R. l. 9. c. 364.

We are yet far from imposing (by any thing we have here alledg'd concerning these Menstrual Periods) those nice and hypercritical Puntillos which some Astrologers, and such as pursue their Rules, seem to oblige our Gard'ners to; as if, forsooth, all were lost, and our pains to no purpose, unless the Sowing and the Planting, the Cutting and the Pruning, were perform'd in such and such an exact minute of the Moon: In hac autem Ruris disciplina non desideratur ejusmodi scrupulositas. There are indeed some certain Seasons, and suspecta tempora, which the prudent Gard'ner ought carefully (as much as in him lies) to prevent: But as to the rest, let it suffice, that he diligently follow the Observations which (by great Industry) we have collected together, and here present him, as so many Synoptical Tables calculated for his Monthly use, to the end he may pretermitt nothing which is under his Inspection, and is necessary, or distract his Thoughts and Employment before the Seasons require it.

And now, however This may seem but a Trifle to some who esteem Books by the bulk, not the benefit; let them forbear yet to despise these few ensuing Pages: For never was any thing of this pretence more fully and ingenuously imparted; I shall not say to the regret of all our Mercenary Gard'ners, because I have much obligation to some above that Epithete; Mr. Rose, Gard'ner to His Majesty, and lately at Essex-house to Her Grace the Dutchess of Somerset; and Mr. Turner, formerly of Wimbleton in Surry; who being certainly amongst the most expert of their Profession in England, are no less to be celebrated for their free communications to the Publick, by divers Observations of theirs, which have furnish'd to this Design. And it is from the Result of very much Experience, and an extraordinary inclination to cherish so innocent and laudable a Diversion, and to incite an Affection in the Nobles of this Nation towards it, that I begin to open to them so many of the interior Secrets, and most precious Rules of this Mysterious Art, without Imposture, or invidious Reserve. The very Catalogue of Fruits

Fruits and Flowers, for the Orchard and the Parterre, will gratifie the most innocent of the Senses, and whoever else shall be to seek a rare and universal choice for his Plantation.

Touching the Method, it is so obvious, that there needs no farther direction; and the Consequent will prove so certain, that a Work of the busiest pains is by this little Instrument rendred the most facile and agreeable, as by which you shall continually preserve your Garden in that perfection of beauty and lustre, without confusion or prejudice: Nor indeed could we think of a more comprehensive Expedient, whereby to assist the frail and torpent Memory through so multifarious and numerous an Employment (the daily subject of a Gard'ners care) than by the Oeconomy and Discipline which we have here consign'd it to, and which our Industrious Gard'ner may himself be continually Improving from his own Observations and Experience. In the mean time, we have at the instance of very many Persons, who have been pleas'd to acknowledge the effects of a former less perfect Impression, thought good to publish an Edition in a smaller Volume, that as an Enchiridion it may be the more ready and useful; but the Kalendar might be considerably augmented, and recommend it self to more Universal use, by taking in the Monthly Employments of all the parts of Agriculture, as they have been begun to us in Columella, Palladius, de Serres, Augustino Gallo, Vincenzo Tanara, Herrera, our Tusset, Markham, and others; especially if well and judiciously applied to the Climate and several Countries: but it were here besides our Institution, nor would the Pages contain them; what is yet found vacant has been purposely left, that our Gard'ner may supply as he finds cause; for which reason likewise we have rang'd both the Fruits and Flowers in Prime after somewhat a promiscuous Order, and not after the Letters of the Alphabet, that the Method might be pursu'd with the least disorder. Lastly,

The Fruits and Flowers in Prime are to be as well considered in relation to their lasting and continuance, as to their maturity and beauty.

Col. de R. R.  
lib. II. c. II.  
Pall. lib. I.  
Tit. I.

J. E.

H h h 2

Kalendarium



# Kalendarium Hortense.

Note, that for the Rising and Setting of the Sun, and Length of the days, I compute from the first of every Month. London Lat.

Sun { rises 08<sup>h</sup>.00<sup>m</sup> }  
sets 04.00 }

JANUARY

{ Hath days } long 8<sup>h</sup>.00<sup>m</sup>  
{ xxxi. }

To be done

In the Orchard, and Olitory-Garden.

**T**rench the Ground, and make it ready for the *Spring*: prepare also *soil*, See the *directions* in the *Treatise of Earth*, p. 317, &c. and be sure you suffer no *weeds* to grow upon your *Compost*: See also p. 325, 326, &c. and use it where you have occasion: Dig *Borders*, &c. uncover as yet *Roots of Trees*, where *Abolueation* is requisite.

\* See Mr. Roses  
Vineyard Vin-  
dicatd, c. 3.

Plant *Quick sets*, and Transplant *Fruit-Trees*, if not finish'd. Set \* *Vines*, and begin to *prune* the old: *Prune* the branches of *Orchard-fruit-trees*; especially the long planted, and that towards the *decrease*: but for such as are newly planted, they need not be dis-branched till the *sap* begins to stir, that so the wound may be healed with the *scar*, and *stub*, which our frosts do frequently leave: In this work cut off all the shoot of *August*, unless the nakedness of the place incline you to spare it: Consult my *French Gard'ner*, part 1. *sec.* 3: for this is a most material Address, *Pomona*, c. 8. You may now begin to *Nail*, and trim your *Wall-fruit*, and *Espaliers*.

Cleanse *Trees* of *Moss*, &c. the *Weather* moist.

Gather *Eggs* for *Grass* before the *buds* sprout; and about the latter end, *Graft* them in the *Stock*, *Pears*, *Cherries* and *Plums*, and remove your *Kernel-stocks* to more commodious distances in your

\* Vide March.

*Nursery*, cutting off the \* *top-root*: Set *Beans*, *Pease*, &c.

Sow also (if you please) for early *Caully-flowers*.

Sow *Chervil*, *Lettuce*, *Radish*, and other (more delicate) *Salletings*, if you will raise in the *Hot-bed*.

In over-wet, or hard weather, *cleanse*, *mend*, *sharpen* and prepare *Garden-tools*.

Turn up your *Bee-hives*, and sprinkle them with a little warm and sweet *Wort*; do it dextrously.

Fruits in *Prime*, and yet *lasting*.

Apples.

**K**entish-pepin, *Russet-pepin*, *Golden-pepin*, *French-pepin*, *Kirton-pepin*, *Holland-pepin*, *John-apple*, *Winter-Queening*, *Mari-gold*, *Harvey-apple*, *Pome-water*, *Pome-roy*, *Golden-Doucet*, *Reinet-ing*, *Louis-Pearmain*, *Winter-Pearmain*, &c.

Pears.

*Winter-Musk* (bakes well) *Winter-Norwich* (excellently baked) *Winter-Bergamot*, *Winter-Bon-crestien*, both *Mural*: the great *Sur-rein*, &c.

Sun { rises-08<sup>h</sup> 00<sup>m</sup> } JANUARY { Hath Days } long-8<sup>h</sup> 00<sup>m</sup>  
       { sets-04 00 }       { xxxi. }

To be done

In the Parterre, and Flower-Garden.

**S**ET up your Traps for *Vermine*; especially in your *Nurseries* of *Kernels* and *Stones*, and amongst your *Bulbous-Roots*: About the middle of this *Month*, plant your *Anemony-roots*, and *Ranunculus's*, which you will be secure of, without *covering*, or farther trouble: Preserve from too great, and continuing *Rains* (if they happen) *snow* and *Frost*, your choicest *Anemonies*, and *Ranunculus's* sow'd in *September* or *October* for earlier *Flowers*: Also your *Carnations*, and such *Seeds* as are in peril of being wash'd out, or over-chill'd and frozen; covering them under shelter, and striking off the *snow* where it lies too weighty; for it certainly rots, and bursts your early-set *Anemonies* and *Ranunculus's*. Unless planted now in the *Hot-bed*; for now is the *season*, and they will flower even in *London*. Towards the end, earth-up, with fresh and light mould, the *Roots* of those *Auricula's* which the *frost* may have uncover'd; filling up the *chinks* about the sides of the *Pots* where your choicest are set: but they need not be *hoist*; it is a hardy Plant.

### Flowers in Prime, or yet Lasting.

**W**inter-Aconite, some *Anemonies*, Winter-Cyclamen, Black-Hellebor, Brunial-Hyacinth, Oriental-Jacinth, Levantine-Narcissus, Hepatica, Prim-roses, Lawr-astinus, Mezerion, Præcox Tulips, &c. especially, if rais'd in the *Hot-bed*. Note,

That both these *Fruits*, and *Flowers*, are more early, or tardy, both as to their prime *Seasons* for eating, and perfection of blowing, according as the *Soil*, and *Situation* are qualified by *Nature*, or *Accident*. Note also,

That in this *Recension* of *Monthly Flowers*, it is to be understood for the whole period that any *Flower* continues, from its first appearing to its final withering.

✕

Sun } rises 07<sup>h</sup> 13<sup>m</sup>  
 } sets 04<sup>h</sup> 45<sup>m</sup>

FEBRUARY

Hath days }  
 } xxviii. } long 9<sup>h</sup> 24<sup>m</sup>

To be done

In the Orchard, and Olitory-Garden.

**P**Run *Fruit-trees*, and *Vines* as yet; For now is your Season to bind, *plash*, *nails*, and dress, without danger of Frost: This to be understood of the most tender and delicate *Wall-fruit*, not finished before; do this before the buds and bearers grow turgid; and yet in the *Nectarine* and like delicate *Mural-fruit*, the later your *Pruning*, the better, whatever has been, and still is, the contrary custom; and let your *Gardner* endeavour to apply the collateral branches of his *mural Trees*, as near as possible he can to the *Bush* or *Bordure*; so as the *Fruit* (when it is grown) may almost touch the ground; the rest of the *Branches* following the same order, will display the *Tree* like a *Ladies Fan*, and repress the common exuberance of the leading, and middle shootes, which usually make too hasty an advance. This is a precious note and to be chiefly practis'd at the first nailing of *Wall-Trees*, and *Espaliers*. Remove *Grafts* of former years *Grafting*. Cut, and lay *Quicks*, &c. and trim up your *Palisade Hedges*, and *Espaliers*. Plant *Vines* as yet, *Gentle Shrubs*, *Hops*, &c. Set all sorts of *Herbs* and *Stony Seeds*. Also sow *Beans*, *Pease*, *Roussesvals*, *Green-falset*, *Marigolds*, *Mustards*, *Ranish*, *Parsneps*, *Carrots*, *Onions*, *Garlick*, &c. and plant *Potatoes* in your worst ground.

Now is your Season for *Circumposition* by *Tubs* or *Baskets* of *Earth*, and for laying of *Branches* to take root. You may plant forth your *Cabbage-plants*.

Rub *Moss* off your *Trees* after a soaking *Rain*, and scrape and cleanse them of *Cankers*, &c. draining away the wet (if need require) from the too much moistned *Roots*, and earth up those *Roots* of your *Fruit-trees*, if any were uncovered. Cut off the *Webbs* of *Catterpillars*, &c. (from the *Tops* of *Twigs* and *Trees*) to burn. Gather *Worms* in the *Evening* after *Rain*.

*Kitchen-Garden* herbs may now be planted, as *Parley*, *Spinage*, and other hardy *Pot-herbs*. Towards the middle, or latter end of this *Month*, till the *Sap* rises briskly, *Graft* in the *Cleft*, and so continue till the last of *March*; they will hold, *Apples*, *Pears*, *Cherries*, *Plums*, &c. the *New Moon*, and the *Old Wood* is best. Now also plant out your *Caully flowers* to have early; and begin to make your *Hot-bed* for the first *Melons* and *Cucumbers* to be sowed in the *Full*; but trust not altogether to them, sow *Asparagus*. Lastly, Half open your *passages* for the *Bees*, or a little before (if weather invite;) but continue to feed weak *Bees*, &c.

Fruits in Prime, or yet lasting.

Apples.

**K**Emish, Kirton, Russet, Holland Pepins; Deux-ans, Winter Queening, *Harvey* sometimes, *Pome-water*, *Pome-ray*, *Golden Doucet*, *Reinsing*, *Deer Pearmain*, *Winter Pearmain*, &c.

Pears.

*Bon-Christien* of *Winter*, *Winter Poppering*, *Little Dagobert*, &c.



✕

Sun { rises-07<sup>h</sup>.13<sup>m</sup> } FEBRUARY { Hath Days } long-09<sup>h</sup>.24<sup>m</sup>  
 { sets-04--45 } { xxviii. }

To be done

In the *Parterre*, and *Flower-Garden*.

**C**ontinue *Vermine Traps*, &c.

Sow *Alaternus* seeds in *Cases*, or *open Beds*; cover them with *thorns*, that the *Poultry* scratch them not out. Sow also *Larks-spurs*, &c.

Now and then *air* your hous'd *Carnations*, in *warm* days especially, and mild *showers*; but if like to prove *cold*, set them in again at night.

Furnish (now towards the end) your *Aviaries* with *Birds* before they couple, &c.

*Flowers in Prime; or yet lasting.*

**W**inter *Aconite*, single *Anemonies*, and some double, *Tulips præcoce*, *Hyacinthus Stellatus*, *Vernal Crocus*, Black *Hel-lebore*, single *Hepatica*, *Persian Iris*, *Lencoium bulbosum*, *Dens Caninus* three-leav'd, *Vernal Cyclamen* white and red, *Mezereon*, *Ornithogal. max. alb.* Yellow *Violets* with large leaves, early *Daffodils*, &c.

## KALENDARIVM HORTENSE.

Sun { rises-06<sup>h</sup>.19<sup>m</sup> }  
 { sets-05<sup>h</sup>.41<sup>m</sup> }

MARCH

{ Hath days } long 11<sup>h</sup>22<sup>m</sup>  
 { xxxi. }

To be done

In the Orchard, and Olitory-Garden.

**Y**ET Stercoration is seasonable, and you may plant what Trees are left, though it be something of the latest, unless in very backward season, or moist places.

Now is your chiefest and best time for raising on the Hot-bed Melons, Cucumbers, Gourds, &c. which about the sixth, eighth, or tenth day will be ready for the Seeds; and eight days after prick them forth at distances, according to the Method, &c.

If you will have them later, begin again in ten or twelve days after the first; and so a third time to make Experiments. Remember to preserve the Hot-bed as much as possible from Rain; for cool him you may easily if too violent, but not give it a competent heat if it be spent, without new-making. See Disc. of Earth, &c.

Graft all this Month, beginning with Pears, and ending with Apples, unless the Spring prove extraordinary forwards. See Pomona, cap. 3.

Now also plant Peaches and Nectarines, early, but cut not off the top-roots, as you do of other Trees; for 'twill much prejudice them: Prune last years Grafts, and cut off the heads of your budded-stocks. Take off the Litter from your Kernel-beds; see Octob. or you may forbear till April. Stir your new-planted grounds as taught in Disc. of Earth, p. 299. and for the Nursery, p. 300.

You may as yet cut Quick-sets, and cover such Tree-roots as you laid bare in Autumn.

It were profitable now also to top your Rose-trees a little with your Knife, near a leaf-bud, and to prune off the dead and withered branches, keeping them lower than the custom is, and to a single Stem.

Slip, and set Sage, Rosemary, Lavender, Thyme, &c.

Sow in the beginning Endive, Succory, Leeks, Radish, Beets, Chard Beet, Scorzonera, Parsnips, Skirrets, Parsley, Sorrel, Bugloss, Borage, Chervil, Sellery, Smallage, Alisanders, &c. Several of which continue many years without renewing, and are most of them to be blanch'd by laying them under litter and earthing up.

Sow also Lettuce, Onions, Garlick, Orach, Purslan, Turneps (to have early) monthly Pease &c. these ann ually.

Transplant the Beet chard which you sowed in August, to have most ample Chards.

Sow also Carrots, Cabbages, Cresses, Fennel, Majoran, Basil, Tobacco, &c. And transplant any sort of Medicinal Herbs.

Mid-March dress up, and string your Strawberry beds, and uncover your Asparagus, spreading and loosning the Mold about them, for their more easie penetrating: Also may you now transplant Asparagus roots to make new Beds: See Disc. of Earth, p. 322.

By this time your Bees sit; keep them close Night and Morning, if the weather prove ill.

Turn your Fruit in the Room where it lies, but open not yet the windows.

Fruits in Prime, or yet lasting.

Apples.

**G**olden Ducket, [Doucet] Pepins, Reineting, Lones Pearmain, Winter Pearmain, John Apple, &c.

Pears.

Later Bon-Chrestien, Double Blossom Pear, &c.

Sun { rises 06<sup>h</sup> 19<sup>m</sup>  
sets 05<sup>h</sup> 41<sup>m</sup> }

MARCH

{ Hath Days } long 11<sup>h</sup> 22<sup>m</sup>  
xxxii.

To be done

In the Parterre, and Flower-Garden.

**S**Take, and bind up your weakest Plants and Flowers against the Winds, before they come too fiercely, and in a moment prostrate a whole years labour.

**Plant Box, &c.** in Parterres: Sow *Pinks*, *Sweet-williams*, and *Carnations*, from the middle to the end of this Month: Sow *Pink-herb*, *Firn-seed*, *Bays*, *Alaternus*, *Phillyrea*, and most perennial Greens, &c. Or you may stay till somewhat later in the Month. Sow *Auricula*-seeds in pots or cases, in fine *willow* earth, a little loamy; and place what you sow'd in September (which is the more proper Season) now in the shade, and water it.

**Plant some Anemone roots** to bear late, and successively; especially in, and about London, where the Smoak is any thing tolerable; and if the Season be very dry, water them well once in two or three days, as likewise *Ranunculus*'s. Fibrous roots may be transplanted about the middle of this Month; such as *Hepatica*'s, *Primroses*, *Auricula*'s, *Camomile*, *Hyacinth*, *Tuberose*, *Matricaria*, *Gentianella*, *Hellebore* and other Summer Flowers; See *Leucosium*; Slip the *Keris* or *Wall-flower*; and towards the end, *Lupines*, *Convolvulus*'s, *Spanish*, or ordinary *Jasmine*. You may now a little after the *Equinox*, prune *Pine* and *Fir*-trees: See September.

Towards the middle, or later end of March sow on the Hot-bed such Plants as are late bearing Flowers or Fruit in our Climate; as *Balsamine*, and *Balsamum mas*, *Pomum Amori*, *Datura*, *Arbustive Apples*, some choice *Amaranthus*, *Daisy*, *Garganium*, *Hedysarum*, *Clypeatum*, *Humble*, and *Sensitive Plants*; *Lentiscus*, *Myrtle-berry* (steep'd a while), *Capsicum Indicum*, *Canna Indica*, *Flos Africanus*, *Mirabilis*, *Peruvian*, *Nasturtium Ind.*, *Indian Phacelia*, *Verbena*, *Carrots*, *Marocot*, five *Flos Passionis*, and the like rare, and exotic Plants which are brought us from hot Countries. Note, that the *Nasturtium Ind.* *African Marygold*, *Verbena*, and some others, will come, (though not altogether so forwards) in the cold bed without Art: But the rest require much, and constant heat, and therefore several Hot-beds, all the common earth be very warm by the advance of the Sun, to bring them to a due stature, and perfect their Seeds: Therefore your choicest *Amaranthus* being risen pretty high, remove them into another temperate Hot-bed; the same you may do with your *African*, and *Sensitive Plants*, especially, which always keep under Glasses: For the making the Hot-bed, See Discourse of Earth, p. 384.

About the expiration of this Month carry into the shade such *Auricula*'s, Seedlings, or Plants as are for their choiceness reserved in Pots.

Transplant also *Carnation* seedlings, giving your Layers fresh earth, and setting them in the shade for a week; then likewise cut off all the sick and infected leaves; for now you may see your choice ones out of cover as directed in February.

Now do the several frosts, and Easterly winds prejudice your choicest Tulips, and spot them; therefore cover such with Mats or Canvas to prevent frosts, and sometimes destruction. The same care have of your most precious *Anemones*, *Auricula*'s, *Chama-iris*, *Brumal Jacynth*, early *Cyclamen*, &c. Wrap your short *Cypris* tops with straw-hops, if the Eastern blasts prove very tedious, and forget not to cover with dry straw, or Pease bams, your young exposed *Evergreen* as yet Seedlings; such as *Firn*, *Pine*, *Phillyrea*, *Bays*, *Cypris*, &c. till they have pass'd two or three years in the Nursery, and are fit to be transplanted; for the sharp Easterly and Northerly winds transpire, and dry them up. Let this also caution you upon all such extremities of weather, during the whole Winter; but be mindful to uncover them in all benign, and tolerable seasons and intermissions; it being these acute Winds, and seldom, or never the hardest Frosts, or Snows which do the mischief. About the end uncover even your choicer Plants, but with Caution; for the rail of the Frosts yet continuing, and sharp Winds, with the sudden darting heat of the Sun, scorch and destroy them in a moment: and in such weather neither sow nor transplant.

Sow *Stock-gilly-flower* seeds in the Fall, to produce double flowers.

Now may you set your *Oranges*, *Lemons*, *Myrtles*, *Oleanders*, *Lentiscs*, *Datts*, *Aloes*, *Anomums*, and like tender Trees and Plants in the Portico, or with the windows, and doors of the Green-houses and Conservatories open for eight or ten days before April, or earlier, if the Season invite (that is, if the sharp winds be past) to acquaint them gradually with the Air; I say, gradually, and carefully; for this change is the most critical of the whole year; trust not therefore the Nights too confidently, unless the weather be thoroughly settled: Now is also your Season to raise Stocks to bud *Oranges* and *Lemons* on; by sowing the Seeds; and some of the hardiest *Evergreens* may be transplanted, especially, if the weather be moist and temperate.

Lastly, Bring in materials for the Birds in the Aviary to build their Nests withal.

Flowers in Prime, and yet lasting.

**A** *Nemones*, Spring *Cyclamen*, Winter *Aconite*, *Crocus*, *Bellis*, white and black *Hellebor*, single and double *Hepatica*, *Laucian*, *Chama-iris* of all colours, *Dens Caninus*, *Violets*, *Fritillaria*, *Chelidonium* small with double Flowers, *Hermodactylis*, *Tuberous Iris*, *Hyacinth Zeboin*, *Brumal*, *Oriental*, &c. *Junquils*, great *Chalic'd*, *Dutch Mezereon*, *Persian Iris*, *Auricula*'s, *Narcissus* with large tufts, common, double and single. *Primroses*, *Præcote Tulips*, *Spanish Trumpets* or *Junquilles*; *Violets*, yellow *Dutch Violets*, *Ornithogalum max.* alb. *Crown Imperial*, *Grape Flowers*, *Almonds* and *Peach blossoms*, *Rubus odoratus*, *Arbor Jude*, &c.



Sun { rises-05<sup>b</sup>-18<sup>m</sup>  
sets-06--42 }

APRIL

{ Hath days } long-13<sup>b</sup> 23<sup>m</sup>  
{ XXX. }

To be done

In the Orchard, and Olitory-Garden.

**S**ow sweet *Majoran*, *Hyssop*, *Basil*, *Thyme*, *Winter-Savoury*, *Scurvey-grass*, and all fine and tender *Seeds* that require the *Hos-bed*.

Sow also *Lettuce*, *Parslan*, *Caully-flower*, *Radish*, &c.

Plant *Artichock-stips*, &c.

Set *French-beans*, &c. and sow *Turneps* to have them early.

You may yet slip *Lavender*, *Thyme*, *Peneroyal*, *Sage*, *Rosemary*, &c.

Towards the middle of this Month begin to plant forth your *Melons*, and *Encumbers*, and so to the latter end; your *Ridges* well prepar'd.

Gather up *Worms*, and *Snails*, after evening showers; continue this also after all Summer-rains: *Weed*, and *Haw* betimes. See *July*: In those *Bordures* where you plant *Wall-fruit*, or *Espalieres* (which *Bordures* should be at the least four or five foot in breadth) plant neither *Herbs* nor *Flowers*, that you may be continually stirring it with the *Spade*, and refreshing it with *composts*, which should be instead of hand weeding; only you may give the outward *verge* an edging of *Pink*, *Limon-time*, &c. renewing them when you perceive them to grow *sticke*, and leave gaps: and you may sprinkle the rest with *Lettuce-seed*, to pluck up roots and leaf for tender *salading*, when their leaves are as broad as a *Six-pence*.

Open now your *Bee-hives*, for now they *hatch*; look carefully to them, and prepare your *Hives*, &c.

Fruits in Prime, or yet lasting.

Apples.

**P**epins, *Denxans*, *West-berry-apple*, *Russeting*, *Gilly-flowers*, *Flat Reinet*, &c.

Pears.

Later *Bou-crestien*, *Oak-pear*, &c. double *Blossom*, &c.

8

 Sun { rises-05<sup>h</sup>.18<sup>m</sup>  
sets-06<sup>h</sup>.42 }
 
x

 APRIL { Hath Days  
xxx. } long-13<sup>h</sup>.23<sup>m</sup>

To be done

In the Parterre, and Flower-Garden.

**S**ow divers *Annals* to have *Flowers* all *Summer*; as double *Marigolds*, *Digitalis*, *Delphinium*, *Cyanus* of all sorts, *Candy-tuffs*, *Garden Pansy*, *Muscipula*, *Scabious*, *Scorpioides*, *Medica*, *Holy-hocks*; *Columbines*, *Rellvidere*, which renew every five or six years, else they will degenerate, &c.

Continue now, and fresh *Hot-beds* to entertain such *exotic* *Plants* as arrive not to their perfection without them, till the *Air* and *common earth* be qualified with sufficient warmth to preserve them abroad: A *Catalogue* of these you have in the former *Month*.

Transplant such *Fibrous-roots* as you had not finish'd in *March*; as *Violets*, *Hepatica*, *Primroses*, *Hillsbor*, *Matricaria*, &c. Place *Auricula* Seedlings in the shade.

Sow *Pinks*, *Carnations*, which you may continue to trim up, and cleanse from dead and rotten leaves, viz. your old roots: Sow *Sweet-Williams*, &c. to flower next year: this after rain.

Set *Lupines*, &c.

Sow *Lucoium* in *Full-Moon*, sprinkle it thin, frequently remove them, and replant in moist weather the following *Spring*.

Sow also yet *Pine-kernels*, *Fir-seeds*, *Phillyrea*, *Alaternus*, and most *perennial Greens*. Vide *Sept*.

Now take out your *Indian Tuberoses*, parting the *Off-sets* (but with care, lest you break their *sangs*) then pot them in \* *natural* (not *forc'd*) *Earth*; a layer of *rich mold* beneath, \* vide *May*. and about this, *natural earth* to nourish the *fibres*, but not so as to touch the *Bulbs*: then plunge your pots in a *Hot-bed* temperately warm, and give them no water till they spring, and then sit them under a *South-wall*: In dry weather water them freely, and expect an incomparable flower in *August*. Thus likewise treat the *Narcissus* of *Japan*, or *Garnsey-Lilly*, mingling the earth with *Sea-sand*, for a later flower; although that nice curiosity, set only in a warm corner, expos'd to the *South*, without any removal at all for many years, has sometimes prospered better: the protuberant *sangs* of the *Tuca* are to be treated like the *Tuberoses*. Make much of this precious *Direction*.

Set out and expose *Flos Cardinalis*: Slip, and set *Marums*: Water *Anemonies*, *Ranunculus*'s, and *Plants* in *Pots* and *Cases* once in two or three days, if drouth require it. But carefully protect from violent forms of *Rain*, *Hail*, and the too parching darts of the *Sun*, your *Pennach'd Tulips*, *Ranunculus*'s, *Anemonies*, *Auricula*'s, covering them with *Matrasses* supported on cradles of hoops, which have now in readiness. Now is the *Season* for you to bring the choice and tender shrubs, &c. out of the *Conservatory*; such as you durst not adventure forth in *March*: let it be in a fair day; only your *Orange-trees* may remain in the house till *May*, to prevent all danger: See the caution in *May*: You may now graft these tender shrubs, &c. by *Approach*, viz. *Oranges*, *Limmons*, *Pomegranads*, *Jasmins*, &c.

Now, towards the end of *April*, you may Transplant, and Remove your tender shrubs, &c. as *Spanish*, *Jasmins*, *Myrtles*, *Oleanders*, young *Oranges*, *Cyclamen*, *Pomegranads*, &c. But first let them begin to sprout; placing them a fortnight in the shade: but about *London* it may be better to defer this work till mid-*August*: Vide also *May*, from whence take *Directions* how to refresh and trim them: prune now your *Spanish Jasmine* within an inch or two of the stock: but first see it begin to shoot. Mow *Carpet-walks*, and ply *Weeding*, with timely bowing, &c.

Towards the end (if the cold winds are past) and especially after showers, clip *Phillyrea*, *Alaternus*, *Cypress*, *Box*, *Myrtles*, *Barba Jovis*, and other *confile shrubs*, &c.

Flowers in Prime, or yet lasting.

**A** *Nemonies*, *Ranunculus*'s, *Auricula Ursi*, *Chame-iris*, *Crown Imperial*, *Caprifolium*, *Cyclamen*, *Bell-flower*, *Dens Caninus*, *Fritillaria*, *Gentianella*, *Hypericum jutex*, double *Hepatic*'s, *Jacynth* starry, double *Daisies*, *Florence-iris*, tufted *Narcissus*, white, double and common, *English* double: *Primrose*, *Cowslips*, *Pulsatilla*, *Ladies-smock*, *Tulips* medias, *Ranunculus*'s of *Tripoly*, white *Violets*, *Musk-Grape-flower*, *Geranium*, *Radix Cava*, *Caltha palustris*, *Parietaria lutea*, *Lucoium*, *Persian Lillies*, *Paeonies*, double *Jonquils*, *Muscaria revers'd*, *Cochlearia*, *Persian Jasmin*, *Acanthus*, *Lilac*, *Rosmary*, *Cherries*, *Wall-pears*, *Almonds*, *Abricots*, *Peaches*, *White-thorn*, *Arbor Jude* blossoming, &c.

Sun { rises-04<sup>h</sup>-25<sup>m</sup> }  
       { sets-07--35 } }

MAY

{ Hath days }  
       xxx. } long-15<sup>h</sup> 09<sup>m</sup>

## To be done

In the Orchard, and Olitory-Garden.

**S**OW Sweet Majoran, Basil, Thyme, hot and Aromatic Herbs and Plants which are the most tender.

Sow Purslan, to have young: Lettuce, large-sided Cabbage, painted Beans, &c.

Look carefully to your Mellons; and towards the end of this Month, forbear to cover them any longer on the Ridges either with Straw, or Matresses, &c. stir up new planted grounds, see Marsh.

Ply the Laboratory, and distill Plants for Waters, Spirits, &c.

Continue Weeding before they run to Seeds, most carefully observing the directions of April and July, which are of extraordinary importance both for the saving of charge, improvement of Fruit, and the neat maintaining of the Gardens.

Now set your Bees at full Liberty, look out often, and expect Swarms, &c.

## Fruits in Prime, or yet lasting.

Apples.

**P**Epins, Deuxans or John-apples, West-berry-apples, Russeting, Gilly-flower-apples, the Maligar, &c. Codling.

Pears.

Great Kairville, Winter Bon-Cretienne, Black-pear of Worcester Surrein, Double-Blossom-pear, &c.

Cherries, &c.

The May-Cherry. Strawberries, &c.



Sun { rises 04<sup>h</sup> 25<sup>m</sup>  
sets 07 35 }

MAY

{ Hath Days  
xxxi. } long 15<sup>h</sup> 09<sup>m</sup>

To be done

In the Parterre, and Flower-Garden.

**N**ow bring your *Oranges*, &c. boldly out of the *Conservatory*; 'tis your only *Season* to *Transplant* and *Remove* them: let the *Cases* be fill'd with natural-earth (such as is taken the first half spit, from just under the *Turf* of the best *Pasture* ground, in a place that has been well sother'd on) mixing it with one part of rotten *Cow-dung*, or very mellow *Soil* screen'd, and prepar'd some time before; if this be too stiff, sift a little *Lime* discreetly with it, with the rotten sticks of *Willows*; if it want binding, a little *Loam*: Then cutting the too thick, and extravagant *Roots* a little, especially at bottom, set your *Plant*; but not too deep; rather let some of the *Roots* appear: Lastly, settle it with temperately enrich'd water (such as is impregnated with *Neat* and *Sheep-dung* especially, set, and stir'd in the *Sun* some few days before; but be careful, not to drench them too much at first; but giving it by degrees day after day, without touching with it the *Stem*;) having before put some rubbish of *Lime-stones*, pebbles, shells, *Faggot-spray*, or the like at the bottom of the *Chest*, to make the moisture passage, and keep the earth loose for fear of rotting the fibres: See *Novemb.* Then set them in the shade for a fortnight, and afterwards expose them to the *Sun*; in this therefore be not over hasty, especially if the season be scorching; for in your discreet acquainting them with this change, will consist their prosperity all the *Summer* after. The best shade for this first exposure, were behind a thin hedge, or *Curtain* drawn before them, which may be now and then sprinkled with water, as the *Seamen* do their *Sails*. See discourse of *Earth*. p. 333.

See Disc. of  
Earth, p. 324.

Give now also all your bous'd plants (such as you do not think requisite to take out) fresh *Earth* at the surface, in place of some of the old *Earth* (a hand-depth or so) and loosning the rest with a fork without wounding the *Roots*: let this be of excellent rich soil, such as is thoroughly consumed, and well sift, that it may wash in the virtue, and comfort the *Plant*: Brush and cleanse them likewise from the dust contracted during their Enclosure. These two last directions have till now been kept as considerable Secrets amongst our Gard'ners: vide *August* and *September*.

\* Vide July.

Shade your *Carnations*, and *Gilly-flowers* after mid-day about this *Season*: Plant also your *Stock-gilly-flowers* in beds, full *Moon*.

Continue watering *Ranunculus's*: Transplant forth your *Amaranthus's*, where you would have them stand: Sow *Antirrhinum*; or you may set it.

Gather what *Anemomy-seed* you find ripe, and that is worth saving, preserving it very dry.

Cut likewise the *Stalks* of such *Bulbous-flowers* as you find dry.

Towards the end take up those *Tulips* which are dried in the stalk; covering what you find to lie bare from the *Sun* and *showers*.

Flowers in Prime, or yet Lasting.

**L**et set *Anemones* and *Ranunculus omni. gen.* *Anapodophylon*, *Blattaria*, *Chamaeiris*, *Augusti-sol.* *Cyanus*, *Cytisus*, *Maranthe*, *Cyclamen*, *Heleborine*, *Columbines*, *Caltha palustris*, double *Cotyledon*, *Digitaria*, *Fraxinella*, *Gladiolus*, *Geranium*, *Horminum Creticum*, yellow *Hemerocallis*, Rrip'd *Jacynth*, early *Bulbous Iris*, *Asphodel*, yellow *Lillies*, *Lychnis*, *Jacea*, *Bellis*, double, white and red, *Millefolium luteum*, *Phalangium*, *Orchis*, *Lilium Convallium*, *Span. Pinks*, *Deptford Pinks*, *Rosa* common, *Cinnamon*, *Guelder & Centifol.* &c. *Oleaster*, *Cherry-bay*, *Trachelium*, *Cowslips*, *Helperis*, *Antirrhinum*, *Syringa's*, *Sedums*, *Tulips serotin*, &c. *Valerian*, *Veronica* double and single, *Musk Violets*, *Ladies Slipper*, *Belvidere*, *Stock-gilly-flowers*, *Spanish Nut*, *Star-flower*, *Chalcedons*, ordinary *Crow-foot*, red *Martagon*, *Bee-flowers*, *Campanula's* white and blue, *Persian Lilly*, *Hony-suckles*, *Bugloss*, *Homers Moly*, and the white of *Dioscorides*, *Pansies*, *Prunella*, purple *Thalictrum*, *Sisymbrium* double and simple, *Leucium bulbosum serotinum*, *Peonies*, *Sambucus*, *Rosemary*, *Stæchas*, *Sea-Narcissus*, *Barba Jovis*, *Laurus*, *Satyriou*, *Oxyacanthus*, *Tamariscus*, *Apple-blossoms*, &c.

§

Sun { rises 03 <sup>h</sup> 51 <sup>m</sup> { sets 08 <sup>h</sup> 09 <sup>m</sup> }	JUNE	{ Hath days } { xxx. } long 16 <sup>h</sup> 17 <sup>m</sup>
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To be done

In the Orchard, and Olitory-Garden.

**S**ow Lettuce, Chervil, Radish, &c. to have young, and tender *Salleting*.

About the *midst* of June you may Inoculate Peaches, Abricots, Cherries, Plums, Apples, Pears, &c.

You may now also (or in May before) cleanse Vines of exuberant branches and tendrils, cropping (not cutting) and stopping the second joint immediately before the Fruit; and some of the under branches which bear no fruit; especially in young Vineyards when they first begin to bear, and thence forwards; binding up the rest to props. Directions for the Nursery this Months beginning, see *Discourse of Earth*, p. 300. and for Ortyards, 317.

Gather Herbs in the Full to keep dry; they keep and retain their virtue and sweet smell better dry'd in the shade than sun, whatever some pretend.

Now is your Season to distill Aromatick Plants, &c.

Water lately planted Trees, and put moist, and half rotten Fearn, &c. about the foot of their Stems, having first clear'd them of weeds, and a little stirred the earth.

Look to your Bees for Swarms, and Casts; and begin to destroy Insects with Hoofs, Canes, and tempting baits, &c. Gather Snails after Rain, &c.

Fruits in Prime, or yet lasting.

Apples.

**J**Uniting (first ripe) Pepins, John-apples, Robillard, Red Fennouil, &c. French.

Pears.

The Mandlin (first ripe) Madera, Green-Royal, St. Laurence-pear, &c.

Cherries, &c.

Duke, Flanders, Heart	{	Black. Red. White.
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Luke-ward, early Flanders, the Common-Cherry, Spanish-black, Naples Cherries, &c.

Rasberries, Corinths, Straw-berries, Melons, &c.

# KALENDARIVM HORTENSE

19

Sun { rises 03<sup>h</sup> 51<sup>m</sup>  
sets 08 09 }

JUNE

{ Hath Days } long 16<sup>h</sup> 17<sup>m</sup>  
xxx.

To be done

In the Parterre, and Flower-Garden.

**T**Ransplant *Autumnal Cyclamens* now if you would change their place otherwise let them stand. Take up *Iris Chalcedon*, Gather the ripe *Seeds* of *Flowers* worth the saving as of choicest *Oriental Jacynth*, *Narcissus* (the two lesser, pale spurious *Daffodils* of a whitish green, often produce varieties) *Auricula's*, *Ranunculus's*, &c. and preserve them dry: Shade your *Carnations* from the afternoon sun.

You may now begin to lay your *Gilly-flowers*.

Take up your rarest *Anemonies* and *Ranunculus's* after rain (if it come seasonable) the stalk wither'd and dry the roots well: This about the end of the Month: In mid-June inoculate *Jasmines*, *Roses*, and some other rare shrubs. Sow now also some *Anemones's* seeds. Take up your *Tulip-bulbs*, burying such immediately as you find naked upon your beds; or else plant them in some cooler place, and refresh over-parch'd beds with water. Water your roots of *Narcissus* of *Japan* (that rare Flower) &c. Stop some of your *Scabious* from running to seed the first year, by now removing them, and next year they will produce excellent flowers. Also may you now take up all such Plants and Flower-roots as endure not well out of the ground, and replant them again immediately; such as the early *Cyclamen*, *Jacynth Oriental*, and other bulbous *Jacynth's*, *Iris*, *Primilla's*, *Crow Imperial*, *Martagon*, *Muscari's*, *Dene Canine's*, &c. The slips of *Myrris* set in some cool and moist place do now frequently take root: Also *Cattus lunatus* will be multiplied by slips in a moist place, such as are in handfuls long of that spring, but neither by seeds or Layers. Look now to your *Aviary*; for now the Birds grow sick of their Feathers; therefore assist them with Emulsions of the cooler seeds bruised in their water, as *Melons*, *Cucumbers*, &c. Also give them *Saccory*, *Beets*, *Groundsel*, *Chick-weed*, *fresh Gravel* and *Earth*, &c.

Flowers in Prime, or yet Lasting.

**A***ttarantus*, *Antirrhinum*, *Asphodel*, *Campanula*, *Convolutus*, *Cyclamen*, *Clematis Pannonica*, *Cyanus*, *Blattaria*, *Digitalis*, *Gladiolus*, *Hedysarum*, *Geranium*, *Horminum Creticum*, *Hieracium*, *Hesperis*, bulbous *Iris*, and divers others, *Lychnis* var. generum, *Martagon* white and red, *Millefolium* white and yellow, *Nasturtium Indicum*, *Nigella*, *Aster Atticus*, *Helabor Alb. Gausiana*, *Trachelium*, *Ficus Indica*, *Fraxinella*, *Shrub Nightshade*, *Jasmines*, *Honey-suckles*, *Bellvidere*, *Genista Hisp.* *Carnations*, *Pinks*, *Armerius*, *Ornithogalum*, *Pansy*, *Phalangium Virginianum*, *Lark-beel* early, *Philosella*, *Roses*, *Thlaspi Creticum*, &c. *Veronica*, *Viola pentaphyl.* *Campions* or *Sultans*, *Mountain Lillies* white, red: double *Poppies*, *Palma Christi*, *Stock-gilly-flowers*, *Corn-flag*, *Hollyhock*, *Muscaria*, *Serpillum Citratum*, *Phalangium Alabrogicum*, *Oranges*, *Rosmary*, *Lentiscus*, *Pomegranate*, the *Lion-weed*, &c.



S

Sun { rises 04<sup>h</sup> 00<sup>m</sup>  
sets 08<sup>h</sup> 00<sup>m</sup> }

JULY

{ Hath days } long 15<sup>h</sup> 59<sup>m</sup>  
xxxii. }

## To be done

## In the Orchard, and Olitory-Garden.

**S**ow *Lettuce, Radish, &c.* to have tender salletting.  
 Sow *later Pease* to be ripe six weeks after *Michaelmas*.  
 Water young planted *Trees*, and *Layers, &c.* and reprove now *Almonds*,  
 and *Peaches*, saving as many of the young likeliest shoots as are well placed;  
 for the now *Bearers* commonly perish, the new ones succeeding: Cut *Clofe*  
 and *even*, purging your *Wall-fruit* of superfluous leaves which hinder from the  
*Sun*; but do it discreetly. Stir up new planted grounds, see *March*.

You may now also begin to *Inoculate*.

Let such *Olitory-herbs* run to seed as you would save.  
 Towards the *later end*, visit your *Vineyards* again, &c. and stop the ex-  
 herant shoots at the second joint above the fruit (if not finish'd before;) but  
 not so as to expose it to the *Sun*, without some umbrage.

Remove long-sided *Cabbages* planted in *May*, to head in *Autumn*; 'tis the  
 best *Cabbage* in the *World*.

Now begin to straiten the entrance of your *Bees* a little, and help them  
 to kill their *Drones* if you observe too many; setting the new-invented *Cu-  
 curbit-Glasses* of *Beer* mingled with *Honey*, to entice the *Wasps, Flies, &c.*  
 which waste your store: Also hang *Bottles* of the same *Mixture* near your  
*Red-Roman-Nectarines*, and other tempting *Fruits*, for their destruction; else  
 they many times invade your best *Fruit*.

Look now also diligently under the leaves of *Mural-Trees* for the *Snails*;  
 they stick commonly somewhat above the fruit: pull not off what is bitten;  
 for then they will certainly begin afresh.

Keep your *Weeds* down, that they grow not to *Seed*, and begin your work  
 of *weeding*, so soon as they begin almost to peep; by this means you will dis-  
 patch more in a few hours, than afterwards in a whole day; whereas if you  
 neglect it till they are ready to seed, you do but stir and prepare the earth  
 for a more numerous crop, and your ground shall never be clear'd.

## Fruits in Prime, or yet lasting.

## Apples.

**D**ux-ans, *Pepins*, *Winter Russeting*, *Andrew-apple*, *Cinnamon-apple*, red  
 and white *Fanning*, the *Margaret apple*, &c.

## Pears.

The *Primat*, *Russet pears*, *Summer pears*, green *Chefil-pears*, *Pearl-pear*, &c.

## Cherries.

*Carnations*, *Morella*, *Great-baker*, *Morocco-Cherry*, the *Egypt*, *Bigarreaux*,  
 &c.

## Peaches.

*Nutmeg*, *Isabella*, *Persian*, *Newington*, *Violet-muscate*, *Rambouillet*.

## Plums, &amp;c.

*Primordial*, *Myrobalan*, the red, blue, and amber *Violet*, *Damasc*. *Denny Da-  
 masc*. *Pear-plum*, *Damasc*. *Violet*, or *Chefil-plum*, *Alricot plum*, *Cinnamon-plum*,  
 the *King-plum*, *Spanish*, *Morocco-plum*, *Lady-Elix-plum*, *Tammy*, *Damascen*, &c.  
*Raspberries*, *Goose-berrys*, *Cornish*, *Strawberries*, *Melons*, &c.

☉

 Sun { rises 04<sup>h</sup> 00<sup>m</sup>  
sets 08 00 }
 

 JULY
 

 { Hath Days  
xxx. } long-13<sup>h</sup> 59<sup>m</sup>

To be done

In the Parterre, and Flower-Garden.

**S**lip Stocks, and other lignous Plants and Flowers: From henceforth to Michaelmas you may also lay Gilly-flowers, and Carnations for Increase, leaving not above two, or three spin-dles for flowers, and nipping off superfluous buds, with supports, cradles, canes, or hoops, to establish them against winds, and destroy Earwigs.

The Layers will (in a month or six weeks) strike root, being planted in a light loamy earth, mix'd with excellent rotten soil and sifted: plant six, or eight in a pot to save room in Winter: keep them well from too much Rains; yet water them in drouth, sparing the leaves: If it prove too wet, lay your pots side-long; but shade those which blow from the afternoon Sun; as in the former Month.

Yet also you may lay Myrtles, Laurels, and other curious Greens.

Water young planted Shrubs and Layers, &c. as Orange-Trees, Myrtles, Granads, Amomum especially, which shrub you can hardly refresh too often, and it requires abundant compost; as do likewise both the Myrtle, and \*Granad-Trees; therefore whenever you trim their Roots, or change their Earth, apply the richest soil (so it be sweet, and well consum'd) you can to them, &c. \*Note, that the Granad flowers best in barren Earth. Clip Box, &c. in Parterres, Knots, and Compartiments, if need be, and that it grow out of order; do it after Rain.

Graft by Approach, Inarch, or Inoculate Jasmines, Oranges, (see August) and other your choicest Shrubs.

Take up your early autumnal Cyclamen, Tulips, and Bulbs (if you will Remove them, &c.) before mention'd; Transplanting them immediately, or a Month after if you please, and then cutting off, and trimming the fibres, spread them to Air in some dry place.

Gather Tulip-seed, if you please: but let it lie in the pods.

Gather now also your early Cyclamen-seed, and sow it presently in Pots.

Remove seedling Crocus's sow'd in September constantly at this Season, placing them at wider intervals, till they begin to bear.

Likewise you may take up some Anemonies, Ranunculus's, Crocus, Crown Imperial, Persian Iris, Fritillaria, and Colchicums; but plant the three last as soon as you have taken them up, as you did the Cyclamens; or you may stay till August or September ere you take them up, and re-plant Colchicums.

Remove now Dens Caninus, &c.

Take up your Gladiolus now yearly, the blades being dry, or else their Off-sets will poison the ground.

Latter end of July, sift your Beds for Off-sets of Tulips, and all Bulbous Roots; also for Anemonies, Ranunculus's, &c. which will prepare it for re-planting with such things as you have ready in Pots to plunge, or set in the naked earth till the next season; as Amaranthus, Canna Ind. Mirabile Peruv. Capsicum Ind. Nasturtium Ind. &c. that they may not lie empty and disfigure'd.

You may sow some Anemonies, keeping them temperately moist.

Continue to cut off the withered stalks of your lower flowers, &c. and all others, covering with earth the bare roots, &c.

Now (in the driest Season) with Brine, Pot-ashes, and Water, or a decoction of Tabaco refuse, water your Gravel-walks, &c. to destroy both Worms and Weeds, of which it will cure them for some years.

Flowers in Prime, or yet Lasting.

**A** Maranthus, Asphodel, Antirrhinum, Campanula, Clematis, Cyanus, Convolvulus, Sultana, Veronica purple and odoriferous, Digitalis, Eryngium Planum, Ind. Phacelus, Geranium triste, and Creticum, Gladiolus, Gentiana, Helperis, Nigella, Hedsyarum, Fraxinella, Lychnia Chalcedon, Jacea, white and double, Nasturt. Ind. Millefolium, Musk-rose, Flos Africanus, Thlaspi Creticum, Veronica mag. & parva, Volubilis, Balsam-apple, Holy-hoc, Corn-flower, Alkekengi, Lupines, Scorpion-grass, Caryophyllata om. gen. Stock-gilly flower, Scabiosa, Mirab. Peru: Spartum Hispan. Monthly-rose, Jasmine, Indian Tuberos Jacynth, Limonium, Linaria Cretica, Pansies, Prunella, Delphinium, Phalangium, Periploca Virgin. Flos Passonis, Flos Cardinalis, Tuca, Oranges, Amomum Plinii, Oleanders red and white, Agnus Castus, Arbutus, Olive, Ligustrum, Tilia, &c.

Sun { rises 04<sup>h</sup> 43<sup>m</sup>  
sets 07<sup>h</sup> 17<sup>m</sup> }

AUGUST

{ Hath days } long 14<sup>h</sup> 33<sup>m</sup>  
{ xxxi. }

To be done

In the Orchard, and Olitory-Garden,

**I** *Noculate now early, if before you began not, and gather your bud of that year: Let this work be done before you remove the Stocks.*

*Prune off yet also superfluous branches, and shoots of this second spring; but be careful not to expose the fruit, without leaves sufficient to skreen it from the Sun; furnishing, and nailing up what you will spare to cover the defects of your Walls. Continue yet to cleanse your Vines from exuberant branches that too much hinder the Sun.*

*Pull up the Suckers.*

*Clip Roses now done bearing.*

*Sow Raddish, especially the black, to prevent running up to seed, pale tender-Cabbages, Cauli-flowers for Winter-Plants, Corn-sallet, Marygolds, Lettuce, Carrots, Parsneps, Turneps, Spinage, Onions; also curl'd Endive, Angelica, Scurvy-grass, &c.*

*Likewise now pull up ripe Onions and Garlic, &c.*

*Towards the end sow Purslan, Chard-beet, Chervile, &c.*

*Transplant such Lettuce as you will have abide all Winter.*

*Gather your Olitory-seeds, and clip, and cut all such Herbs and Plants within one handfull of the ground before the full. Lastly,*

*Unbind, and release the Buds you inoculated if taken, &c. likewise stop, and prune them.*

*Now vindemiate, and take your Bees towards the expiration of this Month; unless you see cause (by reason of the Weather and Season) to defer it till mid-September: But if your Stocks be very light and weak, begin the earlier.*

*Make your Summer Perry, and Cider. See Discourse of Cider, at the end of Pomona.*

Fruits in Prime, and yet lasting.

Apples.

**T** *He Ladies Longing, the Kirkham Apple, John Apple; the Seeming Apple, Cushion Apple, Spicing, May-flower, Sheeps snout.*

Pears.

*Windsor, Sovereign, Orange, Bergamot, Slipper Pear, Red Catherine, King Catherine, Denny Pear, Prussia Pear, Summer Poppering, Sngar Pear, Larding Pear, &c.*

Peaches.

*Roman Peach, Man Peach, Quince Peach, Rambouillet, Musk Peach, Grand-Carnation, Portugal Peach, Crown Peach, Bourdeaux Peach, Lavar Peach, the Peach Des pot, Savoy Malacoton, which lasts till Michaelmas.*

Nectarines.

*The Muroy Nectarine, Tawny, Red-Roman, little Green Nectarine, Cluster Nectarine, Yellow Nectarine.*

Plums.

*Imperial Blue, White Dates, Yellow Pear-plum, Black Pear-plum, White Nutmeg, late Pear-plum, Great Anthony, Turkey Plum, the Jane Plum.*

Other Fruit.

*Cluster-grape, Muscadine, Corinthians, Cornelians, Mulberries, Figs, Filberts, Malons, &c.*



Sun { rises 04<sup>h</sup> 43<sup>m</sup> } **AUGUST** { Hath Days } long 14<sup>h</sup> 33<sup>m</sup>  
 { sets 07 - 17 } { xxxi. }

To be done

In the Parterre, and Flower-Garden.

**N**ow (and not till now, if you expect success) is the just Season for the budding of the Orange Tree: Inoculate therefore at the commencement of this Month: To have Buds most excellent, cut off the head of some very old Orange tree, which making large shoots, will furnish the best Buds for this work.

Now likewise take up your bulbous Iris's; or you may sow their seeds, as also those of Lark-beet, Candy-tufts, Columbines, Iron-colour'd Fox-gloves, Holly-hocks, and such Plants as endure Winter, and the approaching Seasons.

Plant some Anemomy roots to have Flowers all Winter, if the roots escape; and take up your seedlings of last year, which now transplant for bearing: also plant *Dens Caninus*, Autumnal Crocus, and Colchicums: Note, that English Saffron may be suffered to stand for increase to the third or fourth year without removing.

You may now sow Narcissus, and Oriental Jacynths, and re-plant such as will not do well out of the Earth, as *Fritillaria*, *Hyacinths*, *Martagon*, *Dens Caninus*, *Lillies*.

Gilly-flowers may yet be sipp'd.

Continue your taking up of Bulbs, dry them, and lay them up; *Lillies*, &c. of which before.

Gather from day to day your *Alaternus* seed as it grows black and ripe, and spread it to swat, and dry before you put it up; therefore move it sometimes with a broom, that the seeds clog not together, unless you will separate it from the Mucilage, for then you must a little bruise it wet; wash and dry them in a cloth.

Water well your Balsamine seed.

Most other Seeds may now likewise be gathered from shrubs, which you find ripe.

About mid-August, transplant *Auricula*'s, dividing old, and lusty roots; also prick out your seedlings: They best like a loamy sand, or light moist Earth; yet rich, and shaded: You may likewise sow *Auricula*.

Now, towards the latter end, you may sow Anemomy seeds, *Ranunculus*'s, &c. lightly cover'd with fit mold in Cases, shaded and frequently refresh'd: Also *Cyclamen*, *Jacynths*, *Iris*, *Hepatica*, *Primroses*, *Fritillaria*, *Martagon*, *Fraxinella*, *Tulips*, &c. but with patience for some of them; because they flower not till three, four, five, six, and seven years after, especially the *Tulips*; therefore disturb not their beds, but hand weed them, and let them be under some warm place, shaded yet, till the heats are past, lest the seeds dry; only the *Hepatica*'s, and *Primroses* may be sow'd in some less expos'd Beds.

Now, about Bartholomew-tide, is the only secure-season for removing, and laying your perennial Greens; Oranges, Lemmons, Myrtles, *Phillyreas*, *Oleanders*, *Jasmines*, *Arbutus*, and other rare Shrubs, as *Pomegranads*, *Monthly Roses*, and whatever is most obnoxious to frosts; taking the shoots, and branches of the past Spring, and pegging them down in very rich earth and soil perfectly consum'd, watering them upon all occasions during the Summer; and by this time twelve month they will be ready to remove. Transplanted in fit earth, set in the shade, and kept moderately moist, not over wet, lest the young fibres rot; after three weeks set them in some more airy place, but not in the Sun, till fifteen days more; Vide our Observations in April, and May, for the rest of these choice Directions.

Flowers in Prime, or yet lasting.

**A** Maranthus, Anagallis Lusitanica, Aster Atticus, Blattaria; Spanish Bells, Belvedere, Carnations; Campanula; Clematis, Cyclamen Vernal, Datura Tureica, Echiochryson, Eryngium planum & Amethystinum, Geranium Creticum, and Triste, Yellow Stocks, Hieracium minus Alpestre, Tuberosa Hyacinth, Limonium, Linaria Cretica, Lychnis, Mirabile Peruvian. Yellow Millefol. Nasturt. Ind. Yellow mountain Hearts-ease, Maracoe, Africanus flos, Convolvulus's, Scabious, Asphodils, Delphinium, Lupines, Colchicum, Leucoion, Autumnal Hyacinth, Holly-hoc, Star-worts, Heliotrop, French Mary-gold, Daisies, Geranium nobile olens, Common Pansies, Lark-beals of all colours, Nigella, Helieborus, Balsamin. sam. Lobells Catch-fly, Thlaspi Creticum, Rosemary, Musk-Rose, Monthly Rose, Oleanders, Spanish Jasmine, Yellow Indian Jasmine, Myrtles, Oranges, Pomegranads double, and single flowers, Shrub Spirea, Agnus Castus, the Virginian Martagon, Malva arborescens, &c.

K k k z

KALENDARIVM HORTENSE.

Sun { rises-05<sup>h</sup>.41<sup>m</sup> } SEPTEMBER { Hath days } long-12<sup>h</sup> 37<sup>m</sup>  
 { sets-06--10 } { xxx. }

## To be done

In the Orchard, and Olitory-Garden.

**G**ather now (if ripe) your *Winter Fruits*, as *Apples, Pears, Plums, &c.* to prevent their falling by the great *Winds*: Also gather your *Wind-falls* from day to day: do this work in *dry weather*.

**Release Inoculated *Buds*, or sooner, if they pinch.**

SOW Lettuce, Radish, Spinage, Parsneps, Skirrets, &c. Canny-flowers, Cabbages, Onions, &c. Scurvy-grass, Aniseeds, &c.

Now may you *Transplant* most sorts of *Esculent*, or *Physical* Plants, &c.

Also *Artichocks*, and *Asparagus-roots*. See *Disc. of Earth*, p. 222.

Sow also *Winter-Herbs* and *Roots*, and plant *straw-berries* out of the *Woods*.

Towards the end, Earth up your *Winter plants*, and *salad herbs*; and plant forth your *Cauli-flowers*, and *Cabbages* which were sown in *August*. Prepare *Compost*, see *January*: To trench and prepare earth, see *Disc. of Earth*, p. 299.

No longer now defer the *taking* of your *Bees*, straitning the *entrances* of such *Hives* as you leave to a small *passage*, and continue still your *hostility* against *Wasps*, and other robbing *Insects*.

**Cider-making continues.**

*Fruits in Prime, or yet lasting.*

## Apples.

**T**He *Belle-bonne*, the *William*, *Summer Pearmain*, *Lording-apple*, *Pear-apple*, *Quince-apple*, *Red-greening ribb'd*, *Bloody-Pepin*, *Harvey*, *Violet-apple*, &c.

## Pears.

*Hamdens Bergamot* (first ripe) *Summer Bon Chretien*, *Norwich*, *Black Worcester*, (baking) *Green-field*, *Orange*, *Bergamot*, the *Queen* *hedg-pear*, *Lewis-pear* (to dry excellent) *Frith-pear*, *Arun-*  
*del-pear*, (also to bake) *Brunswick-pear*, *Winter Poppering*, *Bings-*  
*pear*, (baking) *Diego*, *Emperours-pear*, *Bluster-pear*, *Messire Jean*,  
*Rowling-pear*, *Balsom-pear*, *Bezy d' Hery*, &c.

Peaches, &c.

*Malacoton*, and some others, if the year prove backwards, *Almonds*, &c.

*Quince.*

Little Blue-grape, Muscadine-grape, Frontiniac, Parsley, great Blue-grape, the Verjuice-grape excellent for sauce, &c.

*Berberries, &c.*

Sun { rises 05<sup>h</sup> 41<sup>m</sup> } SEPTEMBER { Hath Days } long 12<sup>h</sup> 37<sup>m</sup>  
 { sets 06 19 } { XXX. }

To be done

In the Parterre, and Flower-Garden.

**P**lant some of all the sorts of *Anemones* in good, rich natural earth, especially the *Latifol.* after the first Rains, if you will have flowers very forwards; but it is surer to attend till *October*, or the Month after, lest the over moisture of the Autumnal seasons give you cause to repent. Now is the most proper season to sow *Auricula* seeds, setting the Cages in the Sun till April: See April.

Begin now also to plant some *Tulips*, unless you will stay till the later end of *October*, to prevent all hazard of rotting the Bulbs. Plant *Daffodils*, and *Colchicum*.

All Fibrous Plants, such as *Hepatica*, *Hellebor*, *Camomile*, &c. Also the *Capillaries*, *Matricaria*, *Violets*, *Primroses*, &c. may now be transplanted; as likewise *Iris-Chalcidon*, *Cyclamen*, &c.

Now you may also continue to sow *Alaternus*, *Phillyrea*, (or you may forbear till the Spring) *Iris*, *Crown Imperial*, *Martagon*, *Tulips*, *Delphinium*, *Nigella*, *Candy-tufts*, *Poppy*; and generally all the Annuals which are not impair'd by the Frosts.

Sow *Primroses* likewise: Remove seedling *Digitalis*, and plant the slips of *Lychnis* at the beginning.

Your *Tuberoses* will not endure the wet of this Season, therefore set the Pots into your *Conserve*, and keep them very dry; It is best to take them out of the Pots, about the beginning of this Month, and either to preserve them in dry sand, or to wrap them up in Papers, and so put them in a box near the Chimney.

Bind now up your Autumnal Flowers, and Plants to stakes, to prevent sudden Gushs which will esse prostrate all you have so industriously rais'd.

Now you may take off *Gilly-flower*-layers with earth and all, and plant them in pots, or borders shaded.

*Crocus* will be now rais'd of Seeds.

Prune *Pines*, and *Firs* a little after this *Equinox*, if you omitted it in *March* (which is much the better season) Vide *March*.

About *Michaelmas*, (sooner, or later, as the Season directs) the weather fair, and by no means frosty, reare your choice Greens, and rarest Plants (being dry) as *Oranges*, *Lemons*, *Indian*, and *Span. Jasmine*, *Oleanders*, *Barba-Joins*, *Anemum Plis.*, *Cistus Lunatus*, *Chamelæ triccocos*, *Cistus Ledon Clusi*, *Dates*, *Alons*, *Stam's*, &c. into your *Conservatory*; ordering them with fresh mold, as you were taught in *May* and *July*, viz. taking away some of the upmost exhausted earth, and stirring up the rest, fill the Cages with rich, and well consumed soil, to wash in, and nourish the Rooms during *Winter*; but as yet leaving the doors and windows open, and giving them much Air, so the winds be not sharp and high, nor weather foggy; do thus till the cold being more intense, advertise you to entlose them altogether: *Myrtils* will endure abroad near a Month longer.

The cold now advancing, set such Plants as will not endure the House, into the earth; the Pots two or three inches lower than the surface of some bed under a Southern exposure: Then cover them with glass, having cloath'd them first with sweet, and dry moss; but upon all warm, and benign emissions of the Sun, and sweet showers, giving them air, by taking off all that covers them: Thus you shall preserve your costly, and precious *Marum-Syriacum*, *Cistus*, *Geranium nocte olens*, *Flos Cardinalis*, *Maracocs*, seedling *Arbutus*'s (a very hardy Plant when greater) choicest *Ranunculus*'s and *Anemones*, *Acacia Egypt.* &c. Thus governing them till April. Secrets not till now divulg'd.

Note, That Cats will eat, and destroy your *Marum-Syriacum* if they can come at it, therefore guard it with a *Furs*, or *Holly-branch*.

Flowers in Prime, or yet Lasting.

**A** *Maranthus bicolor*, and others; *Anagallis* of Portugal, *Antirrhinum*, *African* fl. *Apocynum Plinii*, After *Articus*; *Belvedere*, *Billis*, *Campanula*'s, *Colchicum*, *Autumnal Cyclamen*, *Clematis*, *Chrysanthemum angustifol.* *Eupatorium* of Canada, *Sun-flower*, *Stock-gil. fl.* *Geranium creticum*, and *nocte olens*, *Gentianella* annual, *Hieracium minus Alpestre*, *Tuberos Indian* *Jacynth*, *Linaria cretica*, *Lychnis constant.* single and double; *Limonium*, *Indian Lilly*, *Narciss.* *Pomum Aurum*, and *Amaris*, & *spinosum* Ind. *Marvel of Peru*, *Millefolium* yellow, *Moly Montpellier.* *Nasturtium Indicum*, *Persian autumnal Narcissus*, *Virginian Phalangium*, *Indian Phascelus*, *Scarlet Brans*, *Convolutus* divers. gen. *Candy-tufts*, *Veronica*, purple *Volubilis*, *Alphodil*, *Crocus*, or *English Saffron*, *Garnsey Lilly*, or *Narcissus* of Japan, *Poppy* of all colours, single, and double, *Malva arborescens*, *Indian Pinks*, *Ethiopic Apples*, *Capicum* Ind. *Gilly-flowers*, *Passion-flower*, *Datura* double and single, *Portugal Ranunculus*'s, *Spanish Jasmine*, yellow *Virginian Jasmine*, *Rhododendron* white and red, *Oranges*, *Myrtils*, *Balanstia*, *Musk-Rose*, and *Monthly-Rose*, &c.



m

Sun { rises-06<sup>h</sup>-36<sup>m</sup> } OCTOBER { Hath days } long 10<sup>h</sup>47<sup>m</sup>  
       { sets-05<sup>h</sup>-24<sup>m</sup> }                       { xxxi. }

To be done

In the Orchard, and Olitory-Garden.

**T**rench Grounds for Orcharding, and the Kitchen-Garden, to lie for a Winter mellowing. See Discourse of Earth, p. 298. &c.

Plant dry Trees (i.) Fruit of all sorts, Standard, Mural, or Shrubs which lose their leaf; and that so soon as it falls: but be sure you chuse no Trees for the Wall of above two years Graffing at the most, sound and smooth. See Disc. of Earth, p. 321. and Pomona, c. 6.

Now is the time for Ablaqueation, and laying bare the Roots of old unthriving, or over hasty-blooming trees. Stir up new planted grounds as directed in March.

Moon now decreasing, gather Winter-fruit that remains, weather dry; take heed of bruising, lay them up clean lest they taint; Cut and prune Roses yearly, reducing them to a Standard not over tall: to prevent bruising by wind-fall, lay some straw under the Trees.

Plant, and Plash Quick-sets.

Remove Graffs after the second year, unless Dwarfs, which you may let stand till the third.

Save, and sow all stony, and hard kernels and seeds; such as black Cherry, Morellos, black Heart, all good; Pear-plum, Peach, Almond-stones, &c. Also Nuts, Haws, Ashen, Sycomor, and Maple keys; Acorns, Beech-mast, Apple, Pear, and Crab kernels, for Stocks; or you may defer it till the next Month towards the latter end, keeping them dry, and free from mustiness; remembring to cover the beds with littier: See directions in Sylva; for Forest-Trees, Pomona, cap. I.

You may yet sow Genoa Lettuce which will last all the Winter, Reddish, &c.

Make Winter Cider, and Perry.

Towards the later end plant Abricots, Cherries, Plums, Vines, Winter-pears, &c.

Fruits in Prime, or yet lasting.

Apples.

**B**elle-et-Bonne, William, Costard, Lording, Parsley apples, Pearmain, Pear-apple, Honey-meal, Apis, &c.

Pears.

The Caw-pear, (baking) Green-butter-pear, Thorn-pear, Clove-pear, Roussel-pear, Lombard-pear, Russet-pear, Saffron-pear, and some of the former Month, Violet-pear, Petworth-pear otherwise call'd the Winter Windsor.

Bullis, and divers of the September Plums and Grapes, Pines, Arbutus, &c.

Sun { rises 06<sup>h</sup> 36<sup>m</sup> } OCTOBER { Hath Days } long 10<sup>h</sup> 47<sup>m</sup>  
 { sets 05<sup>h</sup> 24<sup>m</sup> } { xxxi. }

## To be done

In the *Parterre*, and *Flower-Garden*.

**N**ow your *Hyacinthus Tuberosa* not enduring the wet, must be set into the house, and preserved very dry till April. See September.

Continue *sowing* what you did in *September* if you please: Like-  
wise *Cypress* may be sown, but take heed of the Frost; therefore for-  
bear the *clipping* of them: *vide* March Also,

○ You may plant some *Anemonies*, especially the *Tenuifolia's* and *Ranunculus's*, in fresh sandish earth, taken from under the turf, but lay richer mould at the bottom of the bed, which the fibres may reach; but not touch the main roots, which are to be covered with the natural earth two inches deep: and so soon as they appear, secure them with mats, or dry Straw, from the winds and frosts, giving them air in all benign intervals, if possible once a day.

Plant also *Ranunculus* s. of Tripoly, *Vernal Cracis*, &c. Remove seedling *Holy-hocs*, or others.

plant now your choice *Tulips*, &c. which you feared to interre at the beginning of *September*; they will be more secure, and forward enough: but plant them in *natural earth* somewhat *impoverished* with very fine *sand*; else they will soon lose their *variegations*; some more *rich earth* may lie at the *bottom*, within reach of the *fibre* (as above: Now have a care your *Carnations* catch not too much *wet*; therefore retire them to *covert*, where they may be kept from the *rain*, not the *air*, or lay them on the *sides*; trimming them with *fresh mold*.

All sorts of *Bulbous roots* may now also be safely *buried*; likewise *Iris's*, &c. See *Disc. of Earth*, p. 323, 324. proper mold for *Flowers*.

You may yet sow *Alaternus*, and *Phillyrea* seeds: It will now be good to *Beat, Roll, and Mow Carpet-walks, and Cammomile*; for now the ground is *supple*, and it will *even all inequalities*: Finish your last *Weeding, &c.*

*Sweep, and cleanse your Walks, and all other places from Autumnal leaves fallen, lest the Worms draw them into their holes, and foul your Gardens, &c.*

*Flowers in Prime, or yet lasting.*

**A** *Maranthus tricolor*, &c. After *Atticus*, *Amomum*, *Antirrhinum*, *Colchicum*, *Saffron*, *Cyclamen*, *Clematis*, *Heliotrops*, *Stock-gilly-flo.* *Geranium iriste*, *Ind. Tuberoſe Jacynth*, *Limonium*, *Lychnis* white and double, *Pomum Amoris* and *Æthiop.* *Marvel of Peru*, *Millefol. luteum*, *Autumnal Narciff.* *Panſies*, *Aleppo Narciff.* *Spherical Narciff.* *Nasturt.* *Perſicum*, *Gilly flo.* *Virgin.* *Phalangium*, *Piloſella*, *Violets*, *Veronica*, *Arbutus*, *Span.* *Jasmine*, and yellow *Ind.* *Jasmine*, *Monthly Roſe*, *Oranges*, *Myrtils*, *Balauf.* or *Pomegranade.*

7

Sun { rises-07<sup>h</sup>-34<sup>m</sup> } NOVEMBER { Hath days } long 08<sup>h</sup> 52<sup>m</sup>  
       { sets-04--26 }                         {     xxx.     }

### To be done

In the Orchard, and Olitory-Garden.

**C**arry Compost out of your Melon-ground, or turn, and mingle it with the earth, and lay it in Ridges ready for the Spring; Also trench, and fit grounds for Artichocks, &c. See Disc. of Earth, p. 322.

Continue your Setting, and Transplanting of Trees; lose no time, hard Frosts come on apace: See Disc. of Earth, p. 323. Yet you may lay bare old roots.

Plant young Trees, Standards, or Mural. See Disc. of Earth, p. 321, 322.

Furnish your Nursery with stocks to graff on the following year.

Sow, and set early Beans, and Pease till Shrove-tide; and now lay up in your Cellars for spending, and for Seed, to be transplanted at Spring, Carrots, Parsneps, Turneps, Cabbages, Caully-flowers, &c.

Cut off the tops of Asparagus, and cover it with long-dung, or make Beds to plant in Spring, &c.

Now, in a dry day, gather your last Orchard-fruits.

Take up your Potatoes for Winter spending, there will enough remain for stock, though never so exactly gather'd.

### Fruits in Prime, or yet lasting.

#### Apples.

**T**he Belle-bonne, the William, Summer Pearmain, Lording-apple, Pear-apple, Cardinal, Winter Chess-nut, Short-start, &c. and some others of the former two last Months, &c.

#### Pears.

Messire Jean, Lord-pear, long Bergamot, Warden (to bake) Burnt-Cat, Sugar-pear, Lady-pear, Ice-pear, Dove-pear, Deadmans-pear, Winter Bergamot, Bell-pear, &c.

Arbutus, Bullb, Medlars, Services.



2

Sun { rises-07<sup>h</sup>-34<sup>m</sup> } NOVEMBER { Hath days } long-08<sup>h</sup> 52<sup>m</sup>  
 { sets-04--26 } { XXX. }

To be done

In the Parterre, and Flower-Garden.

**S**OW *Auricula* seeds thus; prepare very rich earth, more than half dung, upon that sift some very light sandy mold, and the earth gotten out of old hollow Willow-trees; and then sow: set your Cases or Pans in the Sun till March, or April.

Cover your peeping *Ranunculus's*, &c. And see the Advice in March, for Ever-green Seedlings; especially, if long Snows, and bitter winds be feared.

Now is your best season (the weather open) to plant your fairest Tulips in places of shelter, and under Espaliers; but let not your earth be too rich; vide October. Transplant ordinary *Jasmine*, &c.

About the middle of this Month (or sooner, if weather require) quite enclose your tender Plants, and perennial Greens, Shrubs, &c. in your Conservatory, excluding all entrance of cold, and especially sharp winds; and if the Plants become exceeding dry, and that it do not actually freeze, refresh them sparingly with qualified water, (i.) mingled with a little Sheeps, or Cow-dung: If the season prove exceeding piercing (which you may know by the freezing of a dish of water, or moistned Cloth, set for that purpose in your Green-house) kindle some Charcoals, and when they have done smoaking, put them in a hole sunk a little into the floor about the middle of it: This is the safest Stove: At all other times, when the air is warm'd by the beams of a fine day, and that the Sun darts full upon the house, without the least wind stirring, shew them the light through the glass windows, but enclose them again before the Sun be gone off: Note, That you must never give your Aloes, or Sedums one drop of water during the whole Winter: And indeed, you can hardly be too sparing of Water to your hous'd plants; the not observing of this, destroys more Plants than all the rudenesses of the Season: To know when they want refreshing, consider the leaves; if they shrivel and fold up, give them drink; if pale, and whitish, they have already too much; and the defect is at the roots, which are in peril of rotting: and note this for a rule, that you are not much to regard the surface mold, for that will often be dust, when the earth about the roots is moist enough: search it therefore with your hand, and as you find occasion, govern the water; for on this secret of seasonably refreshing, consists the health and life of your choicest hous'd curiosities. If your Aloes grow manifestly too dry, expose it a while to the air, when clear, 'twill immediately recover them; but give them not a drop of water how dry so ever their pots be.

House your choicest Carnations, or rather set them under a Pent-house against a South-wall, so as a Covering being thrown over them to preserve them in extremity of weather, they may yet enjoy the freer air at all other times.

Prepare also Mattrasses, Boxes, Cases, Pots, &c. for shelter to your tender Plants and Seedlings newly sown, if the weather prove very bitter.

Plant *Roses*, *Althæa frutex*, *Lilac*, *Syringas*, *Cytisus*, *Peonies*, &c.

Plant also *Fibrous roots*, specified in the precedent Month.

Sow also stony seeds mentioned in October.

Plant all Forest-trees for Walks, Avenues, and Groves. See *Sylva*.

Sweep and cleanse your Garden-walks, and all other places, from Autumnal leaves, the last time.

Flowers in Prime, or yet lasting.

**A** *Nemones*, *Meadow Saffron*, *Antirrhinum*, *Stock-gilly-fl.* *Bellis*, *Clematis*, *Pansies*, some *Carnations*, double *Violets*, *Veronica*, *Spanish and Indian Jasmine*, *Myrtils*, *Musk Rose*, &c.

## KALENDARIVM HORTENSE.

v

Sun { rises-08<sup>h</sup>-10<sup>m</sup> } DECEMBER { Hath days } long-07<sup>h</sup> 40<sup>m</sup>  
       { sets-03--50 } { xxxi. }

To be done

In the Orchard, and Olitory-Garden.

**P** *Prune*, and *Nail Wall-fruit*, (which yet you may defer a *Month* or two longer) and *Standard-trees*.

You may now plant *Vines*, &c. See *Disc. of Earth*, p. 322.

Also *Stocks* for *Grafting*, &c.

Sow as yet, *Pomace of Cider-pressings* to raise *Nurseries*; and set all sorts of *Kernels*, *Stones*, &c.

Sow for early *Beans*, and *Pease*, but take heed of the *Frosts*; therefore *surest* to defer it till after *Christmas*, unless the *Winter* promise very *moderate*.

All this *Month* you may continue to *Trench* Ground, and *dung* it, to be ready for *Bordures*, or the planting of *Fruit-trees*, &c. See the Note in *January*.

Either late in this *Month*, or in *January*, *prune*, and cut off all your *Vine shoots* to the very root, save one, or two of the stoutest, to be left with three, or four eyes of young wood: This, for the *Vineyard*.

Now feed your weak *Stocks*.

*Turn*, and refresh your *Autumnal Fruit*, lest it taint, and open the *Windows* where it lies, in a clear and *Serene* day.

Fruits in Prime, and yet lasting.

Apples.

**R** onsetting, *Pepin*, *Leather-coat*, *Winter Reed*, *Chest-nut-Apple*, *Great-belly*, the *Go-no-further*, or *Cats-head*, with some of the precedent *Month*.

Pears.

The *Squib-pear*, *Spindle-pear*, *Doyoniere*, *Virgin*, *Gascogne-Bergomot*, *Scarlet-pear*, *Stopp-pear*, *White*, *red*, and *French Wardens* (to bake or roast) &c. the *Dead-mans pear*, excellent, &c.

# KALENDARII M HORTENSE.

31

Sun { rises 08<sup>h</sup> 10<sup>m</sup> } DECEMBER { Hath days } long 07<sup>h</sup> 40<sup>m</sup>  
 { sets 03--50 } { xxxi. }

To be done

In the Parterre, and Flower-Garden.

**A**S in *January*, continue your *hostility* against *Vermine*.  
 Preserve from too much *Rain* and *Frost*, your choicest *Anemones*, *Ranunculus's*, *Carnations*, &c.

Be careful now to keep the *Doors* and *Windows* of your *Conservatories* well *matted*, and guarded from the piercing *Air*: for your *Oranges*, &c. are now put to the *test*: Temper the cold with a few *Charcoal* govern'd as directed in *November*; but never accustom your *Plants* to it, unless the *utmost* severity of the *Season* require; therefore, if the *place* be exquisitely *close*, they will even *then* hardly require it, &c.

Set *Bay-berries*; &c. dropping ripe.

Look to your *Fountain-pipes*, and cover them with fresh, and warm *Littier* out of the *Stable*; a good *thickness*, lest the *frosts* crack them; remember it in *time*, and the *Advice* will save you both trouble and charge.

Flowers in Prime, and yet lasting.

**A**Nemones some, *Persian*, and *Common winter Cyclamen*, *Antirrhinum*, *Mezereon*, *Black Hellebor*, *Lanrustinus*, single *Primroses*, *Stock-gilly-fls.* *Iris Clusii*, *Snow flowers* or *drops*, *Tucca*, &c.



## KALENDARII M. HORTENSE.

For by such a *Kalendar* it is that a *Royal Garden* or *Plantation* may be contrived, according to my Lord *Vernham's* design, *pro singulis Anni Mensibus*, for every *Month* of the *Year*.

But, because it is in this *cold Season*, that our *Gard'ner* is chiefly diligent about preserving his more *tender, rare, exotic, and costly Shrubs, Plants, and Flowers*; We have thought fit to add the *Catalogue*, as it is (much after this sort) collected to our hands, by the *Learned and Industrious Doctor Sharrock* (though with some *reformation and improvement*) of all such, as according to their different *Natures*, do require more, or less indulgence: And these we have distributed likewise, into the three following *Classes*.

## I. CLASSE.

Being least patient of *Cold*, and therefore to be first set into the *Conservatory*, or other ways defended.

*A* *Cacia Egyptiaca*, *Aloe American*, *Amaranthus tricolor*, *Aspalathus Cret*, *Balsamum*, *Helichryson*, *Chamelæa tricolor*, *Nasturtium Indicum*, *Indian Narcissus*, *Ornithogalon Arab*, *Ind*, *Phaseol*, *Capiscum Ind*, *Pomum Ethiop*, *Aureum*, *Spinosum*, *Summer Sweet Majoran*, the two *Marums Syriac*, &c. *Dactyls*, *Pistacio's*, the great *Indian Fig*, *Lavendula Multif*, *Clus*, *Cistus Ragusæus flo. alb*, *Colutea Odorata Cretica*, *Narcissus Tuberosus*, *Styrax Arbor*, &c.

## II. CLASSE.

Enduring the second degree of *Cold*, and accordingly to be secur'd in the *Conservatory*.

*A* *Momum Plinii*, *Carob*, *Chamelæa Alpestris*; *Cistus Ledon*, *Clus*, *Citron*, *Vernal Cyclamen*, *Summer Purple Cyclamen*, *Digitalis Hispan*, *Geranium triste*, *Hedysarum Clypeatum*, *Aspalathus Creticus*, *Span*, *Jasmine*, *Virgin*, *Jasmine*, *Suza Iris*, *Jacobæa Marina*, *Alexandrian Laurel*, *Oleanders*, *Limonium elegans*, *Myrtals*, *Oranges*, *Lentiscus*, *Levantine rusted Narcissus*, *Gill. flo.* and choicest *Carnations*, *Phalangium Creticum*, *Asiatic double* and single *Ranunculus's*, *Narcissus of Japan*, *Cytisus rubra*, *Canna Indica*, *Thymus Capitatus*, *Verbena nodi flo. Cretica*, &c.

## III. CLASSE.

## III. CLASSE.

Which not perishing but in excessive Colds, are therefore to be last set in; or rather protected under Mattraffes, and sleighter Coverings, abroad in the Earth, Cases, Boxes, or Pots, &c.

**A** Brotanum mas, sœm. Winter Aconite, Adiantum Verum, Bellis Hispan. Calceolus Mariæ, Capparis, Cineraria, Cneorum Matthioli, Cytisus Maranthæ, rub. Lunatus, Eryngium planum totum Cæruleum, Fritillaria mont. Genista Hispan. flo. alb. Ponegranads, Oriental Jacynth, Bulbous Iris, Laurels, Cherry Laurel, Lychnis double white, Matricaria double flo. Olives, Pancration, Papaver spinosiss. Maracoc, Rosemary, Sisyrrichium, Turpentine-tree, Teuchrium mas, Tithymal. Myrtifol. Vetonica doub. flo. single Violets, Serpentaria trifol. &c. Ornithogalon Arab. white and doub. Narcissus of Constantinople, late Pine-apples, Moly, Persian Jasmine, Opuntia, or the smaller Indian Fig, Jucca, Seseli Ethiop. Agnus Castus, Malva Arborescens, Cistus mas, Sarsaparilla, Cupressus, Crithmum marinum, &c.

And to these might some others be added; but we conceive them sufficient, and more than (we fear) some envious, and mercenary Gard'ners will thank us for; but they deserve not the name of that Communicative, and noble Profession: However, this, as a Specimen of our Affection to the Publick; and in Commiseration of divers honourable, and Industrious Persons, whose Inclination to this innocent Toil, has made them spare no Treasure, or Pains for the furniture of their Parterres with variety, the miscarriage whereof being sometime universal to the Curious, has made us the more freely to impart both what we have experimentally learn'd by our own Observations, and from others of undoubted Candor and Ingenuity: But of this, we promise a more ample Illustration, as it concerns the entire Art, together with all its Ornaments of Use, and Magnificence, as these endeavours of ours shall find entertainment, and opportunity contribute to a Design, which I confess I have formerly oblig'd my self to publish; but as it has been now long under my hand, so daily increasing in bulk, with fresh, and material observations, it will require a more accurate Transcript for the Press, and better leisure than as yet I can obtain to perfect that absolute work as I think I may without immodestly term it, compar'd with any on that subject to this day Extant.

Now forasmuch as there are divers Gentlemen, and Persons of Honour inquisitive after Catalogues of the more choice, and rarer Fruits, I have thought good (*ex abundanti*) to annex the following Tables, as I find them approv'd of in the best Plantations and Ortyards, as well as Authors.

For

## KALENDARIVM HORTENSE.

For those who affect to have their Fruit out of France.

## Apples.

**P**asse Pomme blanche batifue, Passe pomme Cotellée, Calville d'Esté, Rambour blanc, Rambour rouge, Consnette, Pomme de Violette, Pomme de neige, Calleville blanc, Calleville rouge, Pomme d'Apiet, Renette blanche, Meillieur Renette rousse, Renette toute grize, petit Courpendu gris, Courpendu Vermeil, Gros Courpendu Bedeau, Franeatu, Pomme-poire, Chataigner, &c.

## Pears.

## June.

Petit Muscat. D. S. Petit certeau d'Esté. D. W. Janet. D. W. Pucelle or Palme.

## July.

Gros Muscat ordinaire. S. Muscat a longue queue. S. Muzelle. S. Gros Muscat, ou, Belissime. S. Muscat Robert. S. Cuiffe Madame. S. W. Rousselet batif. S. W.

## August.

Orange commune. S. D. W. Orange Musquée. S. D. W. Amiral. S. D. W. Amiral Musquée. S. D. W. Grosse Blanquette, or poir de Perle, or Cornicapre. S. D. W. Oignonnet. S. D. W. Poire de Prince, Poire Royale, Poire à deux têtes, all S. D. W. Poire raze. W. D. Pin, ou batif. S. D. W. Poire Curmesine. S. D. W. Friolet, Moüille-bouche d'Esté, Bon-Chrestien d'Esté, Franc-Sureau, or Poire de Papas, all in S. D. or W.

## September.

Rousselet ordinaire, Gros Rousselet de Rheims, Jargonelle. S. D. W. Caillau Rozart. S. Perfum. S. D. W. P. sans pepins. P. de Sain. S. D. W.

## October.

Beuré rouge. Beuré blanc. S. D. W. Rozar d'Ingranade. D. W. Bergamotte d'Esté, W. Oignon Rozar, or Brutte-bonne. W. D. Poire d'Angleterre. S. D. W. P. d'Amber-gris. D. W. P. de Vigne. S. D. W. Petit Oing-gris, Chat-Brulé. S. D. W.

## November.

Messire Jean Ordinaire, M. Jean blanc. Bezidberry, Damadote, Grosse queue d'Hyver. S. D. W. Bergamotte ordinaire. W. Martin sec. S. D. W. Bergamotte Musqué or P. de Sicile. D. W.

## December, to eat Raw.

Micet. W. Poire Figue. S. D. W. Rousselet d'Hyver. S. D. W. Bon-Chrestien d'Anche Cottelé. W. B. Chrestien rond. B. Chr. long. B. Chr. doré sans pepin. W. P. de Froment. S.

## To Bake.

Fin Or, or Franc-real. S. D. Dame Jeanne. Bon Evesque, Foulon. S. D.

## January, to eat Raw.

Gratellier or Beuré d'Hyver. S. D. W. Bergamotte d'Hyver. Orange d'Hyver. S. D. W. all the Bon Chrestiens.

To



# KALENDARII M. HORTENSE.

35

To Bake.

Poire d'Argent, S. Râteau, Herpiene, Angobert or Languedoc, Gros Certeau. S.

February, to eat Raw.

Saint Lézin. W. St. Lézin Beurre. W. Messire Jean tardif. D. W. B. Chrestien.

To Bake.

Petit Certeau. S. D. de la Domville. S.

March, to eat Raw.

Portail. W. Gros Muscat d'Hyver a grosse queue. D. W.

To Bake.

Poire de Livre. S.

April, to eat Raw.

Bergamotte de Beugy. W. D. Poire d'Estrangillon. W. D. Virginette. W. D.

To Bake.

Liquet rond. S. Parmain, Bouvart or Chesne Galen. S.

May, to eat Raw.

Double Fleuri. D. W. Fontarabie. W.

To Bake.

Girofle.

Cherries.

Cerises precoces, C. Hatifi, C. à feuille de sange, Grosse C. à court queue, C. tardifs à longue queue. Guigue, Bigarreau, Griote. W. S.

Abricots.

Ab. Musque.

Plums, to eat Raw.

Petit Damas noir de Tours, Gros Damas noir, Petit Damas blanc, Gros Damas blanc, Damas Gris Musque, Dam. violet ordinaire, Gros Damas Violet, Damas Verd, Dam. gris violet, Dam. gris blanc, Perdrigon blanc. W. Perdrigon violet. W. Brignolés Violettes, Grosse Imperiale, Imp. tardife. De Guillon, d'Attilles de Gouvar, d'Attilles du Mans, Prunes de Naples, or Damas gris de Caiban. D. S.

To preserve.

Moyens de Bourgogne, Mirabelle, St. Catherine, Diaprée de la Roche Courbon, Prunes d'Abricot de Tours, Mirabons transparents, Montmirot, d'Attille Jaune, l'Isle verd. D. S.

Peaches.

Avant Pesche blanc, Pavie. Avant P. d'Italie. Pesche de Troix blanche, P. de Troix jaune, fort musquée. P. de Troix double. Al-berge. Pesche Magdeleine, P. blanche hatifue. Pavie blanc hatif. P. Cerize, P. Violente licée, Brignon Violet, or Musqué, Pavie. Brignon jaun. Pesche Royale, Grosses Roussanes, Petites Roussanes, Gros Pavies jaunes, &c. rouges Persiques, Pesches de Pan, or Persiques ronds, Grosses Pesches jaunes, P. Bourdes. P. Abrigotines, P. Ollieres, Pesches de Corbiel. P. blanches, & Vermeilles, P. de Narbonne, & P. admirables. Pavie admirable. Pesche violette tardive, Pavie de Chinon, Brignon violette tardive, Melle-cotons

## KALENDARIVM HORTENSE.

*cotons vermeils, Pefche blanc & rouge, Pavies blancs tardifs, Pefche tout blanche, P. befte-rave. Brignon Befte-rave, Brignon tout noire.*

Note, that S.D.W. fignifies that they may be planted in *Standard, Dwarfs*, or at the *Wall*, and thefe are the moft curious, and re-  
fearched forts of *Fruit-trees*, which are to be procur'd about *Paris*,  
but of which we have many amongst the well furnifh'd Plantations  
of *Gentlemen* both near the *City of London*, and in the *Country*.

*Catalogue of Fruit-trees to be had out of the Nurseries near  
the City of London.*

## Apples.

*Golden Pepin, Kentifh P. Stone P. French P. Rufset P. Holland  
P. Kirton P. Carliffe P. Bridgwater P. Summer pepin, Bloudy pe-  
pin. Summer Pearmain Winter Pearmain, Rufset Pearmain,  
Golden Rufseting, Green Ruff. Red Rufseting. Orange Apple,  
Golden Rennet, Lincoln Rennet, Leather-coat, John Apple, Ma-  
rigold, Harvey, Queen-Paradife, Apples; Gilliflower, Margaret,  
Weftberry, Golden doucet, Pome-water, Pome Roy, Juniting, Cla-  
ret-wine, Giant, Famagusta, Good-houfwife, Cats-head, Spicing  
Apples, Violet Angels bit, Lording, Pome Appis, Fig Apple, Creeper,  
Indian Crab, Bell & bon summer and winter, Pear Apple.*

## Cider Apples.

*Redftrakes* summer, winter, yellow, red, through ftrak'd; *Gen-  
net Moyle*, white and red *Muft*, *Fox-whelp*, *Bromsbury Crab*; *E-  
leots Apple*, *Stocken*, *Bitter Scale*, *Deans Apple*, *Pureling*, sum-  
mer and winter *Fillets*, *Underleaf*, *Grange Apple*, *Olive Apple*,  
*Quince Apple*, *Non-fuch*, *Peeling*, *Oken-pin*, *Greening*: Amongft  
the *Sweetings* the *Hony-comb*, the *small Rufset Sweet Apple*, *Cod-  
lings*, &c.

## Pears.

*Bæure du Roy*, *Greenfield*, *Sufan*, *Windfor*, *Bergamots*, *Maud-  
lin*, *Sugar*, *Margarite*, *Madera*, *St. Laurence*, *Chefil*, *Royal*, *Orange*,  
*Katherines*, *Souveraigne*, *Denny*, *Popperings*, *Pruffia*, *Bon-Chrefiti-  
ens*, *Lording*, *Hamden*, *Bezi*, *Painted*, *Violet*, *Short-start*, *Dove*,  
*Musks*, *Bingfield*, *Rufsets*, *Rouffelet*, *Norwich*, *Amadotte*, *Wor-  
cefter Pomegranade pear*, *Edward*, *Maiden-heart*, *Bloudy*, *Lewis*,  
*Stone*, *Caw*, *Arundel*, *Bifhops*. The feveral *Wardens*, viz. *English*,  
*Spanish*, *French*, *Roman*, white, green, and *Parkinfons Warden* beft  
of all: To thefe add the *Diego*, *Meffier Jehan*, *Rowling*, *Balfam*,  
*Blufter*, *Emperial*, *Queen-hedge*, *Frith*, *Bings*, *Brunfwic*, *Thorn*, *Por-  
tail*, *Non-fuch*, *Clove*, *Lombart*, *Rufset*, *Petworth*, *Saffron*, *Pound*,  
*Burnt-Cat*, *Hundred-pound pear*, *Lady*, *Deadmans*, *Bell*, *Ice*, *Virgin*,  
*Gascoigne*, *Stoppie*, *Scarlet*, *Doyoniere*, *Dionier*, *Spindle*, *Squib*,  
*Surrein*, *Dagobert*, *Kairville*, *Double bloffome*, *Oaken*, *Black Wor-  
cefter pear*, &c.

For

For Perry.

*John Pear, Drake, Lullam, Bosbury, Barelant, Red and Green Squash, the green Harpary, Mary, Horse-Pears, &c.*

Charries.

*Dukes, Lukward, Bleeding-Hearts White, Red, Black, Flanders, Cluster, white and black Spanish, Amber, Black-Orleans, Naples, English, Carnation, Morella, Morocca, Egriot, Begarreaux, Portugal, Cologne, Prince, Kings, Crown, Purple, Ounce, Black, Dwarf Cherries, &c.*

Abricots.

*Male, Algier, Orange, Roman, the Common Abricot.*

Peaches.

*Nutmeg, Savoy, Newington, Troy, Isabella, Monsieur, Persian, Belline, Magdalen, Queen, Double-blossome, Rambouillet, Violet, Musc, Roman, Crown, Man, Carnation, Portugal, Bordeaux, Quince, Des-pot, Pavie, Verona, Smyrna, Colerain, Bloody, Orleans, Navar, Morella, Alberges : Nectarines, the red Roman, Tawny, Murroy, Green, Cluster, White, Painted, Russet, Orbine, White paper Nectarines ; lastly Malacottons.*

Plums.

*Primordians, Violet, Amber, Morocco, Damasine, Myrobalan, Abricot, Barbary, Kings, Imperial, Cinamon, Mogol, Tawny, Elizabeth, Pear-Plums white and black, Osterly, Musc, Prunella, Catalonia, Bonum Magnum, Laurence, Wheaten, Cheston, Queen-Mother, Bole, diapred, Damasco, Marbl'd, Foderingham Plum, Pedrigon, Verdock, Gaunt, Peach, Denny, Peascod, Turkie, Dates, Jane, Prince, Antony, Nutmeg, Damsons, and Bullis.*

Grapes.

*Parfly, Frontiniacs white and red, Muscadines, small Black, or Cluster-grape, Currant, Orleans, Raisin, Blue, Bursarobe, Burlet, Verjuice-grape.*

Figs.

*Scio, Blue, Dwarf, Purple, Yellow.*

Quinces.

*Portugal apple and pear Quinces, English, Barbary, Brunswic, Lions, Spanish, &c.*

Gooseberries.

*Early Red, great Yellow, and White, Dutch Gooseberries, Blue, Crystalline, English yellow ; Hedge-hog, Green, Rough Gooseberries.*

M m m

Corinths.



## KALEDNARIUM HORTENSE.

## Corinths.

*English red, white, Dutch-red, great Red, Black, Currans.*

## Berberries.

*The great Bar, without Stones, the ordinary Berb.*

## Rasberries.

*The large Red, and White Garden-Rasb. the Wild-Rasb black.*

## Mulberries.

*The Black, or Red, the White, Virginian.*

## Strawberries.

*Common Wood-Str. English Garden, American, Polonian, the great White Coped Str. Long-red, the green Strawb. &c.*

## Other Fruit.

*Cornelians, Medlar Neapolitan, the great Dutch Med. the common English Med. and one without stones.*

*Services or Chequers, the Pear-forb.*

*Walnuts, the Early-nut: The great double Wall. the Tender-Scul, the Hard shell, the Bird-nut.*

*Filbirds or Avellans, the Red, White, the Constantinopolitan, the large Hasel-nut, the long thin-shell'd, the great round, &c.*

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FINIS.

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## E R R A T A.

### S Y L V A.

**P**age 7. line 32. read unfermented, are (*with a comma*) p. 30. l. 16. r. is near twelve foot.  
 l. 25. r. *Atinia*. p. 35. l. 44. r. *foliage*. p. 44. l. 8. r. days more. p. 49. l. 33. r. *Marden*.  
 p. 55. l. 4. r. *letation*. p. 61. l. 36. r. and of *Tew*. p. 66. l. 39. r. unparallel'd. p. 69. l. 48. r. *superannuated*. p. 77. l. 47. r. *slooped*. p. 86. l. 19. r. *Figg*. p. 92. l. 32. r. other parts (so many years advanc'd.) p. 94. l. 20. *dele to*. p. 97. l. 6. r. *reduc'd*. p. 107. l. 21. r. in the cold. l. 37. r. that honourable. p. 111. l. 14. r. very good. p. 112. l. 38. r. *lustrous*. p. 117. l. 7. r. *resisting* Fire. p. 126. l. 13. (in the *Contents of Cap. 25.*) r. *Phillyrea*. l. 38. r. *use of Cork*. p. 127. l. *penult.* *Aesculus*. p. 133. l. 20. r. in any spot. p. 144. l. 16. r. than *finall*. p. 145. l. 1. r. *Pæonie*. l. 21. r. *Tree*. p. 149. l. 25. *dele every*. p. 151. l. 37. r. *severely*. p. 162. l. 13. r. *gli tre Castagns*. l. 45. r. *spreads*. p. 180. l. 22. *Comma at Calcule*. p. 182. l. 5. r. 183. l. 31. r. *smaller end*, 23. only. p. 183. l. 14. r. *First Column of the Fifth Table*. p. 193. l. 24. r. *Months*. p. 195. l. 33. r. *haply*. *Lin. ult.* r. *detruding*, for *obtruding*. p. 197. l. 25. *dele all*. p. 200. l. 16. r. *finding*. p. 201. l. 14. r. *gives*. p. 208. l. *ult.* r. *said here*. p. 209. l. 4. *dele mas*. l. 35. r. *second to that*. p. 210. l. 26. r. are not yet. p. 213. l. 40. r. *interchange*. p. 215. l. 1. r. *Symptoms*. p. 240. l. 25. *Amenities*. l. 41. r. *gentile*. p. 253. l. 28. r. *Umbrâ*. p. 257. l. 5. r. *ingenuous*. p. 258. l. 4. r. *Survius*. p. 263. l. 1. r. where it seems. p. 266. l. 23. r. and *Virgil*. *dele and*. p. 267. l. 24. r. They gave the day for lost. p. 269. l. 8. r. *Pseudo-Plautus*. p. 270. (in *margin*) r. *Salmasius*. p. 272. l. 27. r. *Exemplars*. p. 279. l. *autepenult.* r. *Odors*. p. 281. *first Column*, r. *Phillyrea*.

### Philos. Disc. of EARTH.

Page 317. line 21. read *Mould, passim*. p. 331. l. 28. transfer the Interrogation from *fall*, to *Air*.

### Kalendar.

Page 30. l. 9. for *promise*, r. *prove moderate*.  
 These *Frailties* of the *Printer*, singular for plural, mistakes in *Exotic Names*, Misinterpunctations, and some other Incongruities, the Civil Reader will easily Pardon.